



# **Axeda Supervisor™**

**The complete Internet-based solution for control and information**

**Wizcon 9.0**

## **WizOPC Suite**

## **User Guide**

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# Introduction

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Axeda Supervisor™ contains an extensive suite of OPC tools. This document serves as a reference for each of the available tools:

- OPC DA Client and Server (VPWNOPC and WizOPCDA.exe, respectively)
- OPC AE Client (Wiz\_AEClient.exe)
- OPC HDA Server (WizOPCHDA.exe)

Please note however, that this is not an introductory guide to OPC and is primarily useful to readers who already have a basic knowledge of OPC.

## *OPC Overview*

---

OPC is an open standard for process control. OPC gathers specifications published by users within the [OPC Foundation](#). To use these specifications, all you have to do is to accept and to respect the user conditions

An OPC server exposes interfaces that can be used by an OPC client using COM mechanisms. All OPC servers using the same specification follow the rules set up by the OPC foundation. These rules, the OPC specifications, guarantee to OPC clients that they will be able to exchange information with OPC servers. However, the different aspects of process control have led the OPC foundation to release several specifications.

The OPC specifications define the « COM interfaces » which deal with the different aspects of process control. They aim to increase inter-operability between process control applications and the equipment with which they communicate. The OPC specifications use the client/server model used in COM architecture.

## *Available specifications*

---

So far the OPC foundation has issued several specifications which can be split in three groups.

### **Specifications shared between all servers**

- OPC Common
- OPC Security

### **Basic specifications (foundations)**

- OPC Data Access **OPC DA**
- OPC Alarm & Event, OPC **A&E**
- OPC Historical Data Access **OPC HDA**
- OPC Batch, OPCBatch or **OPCB**

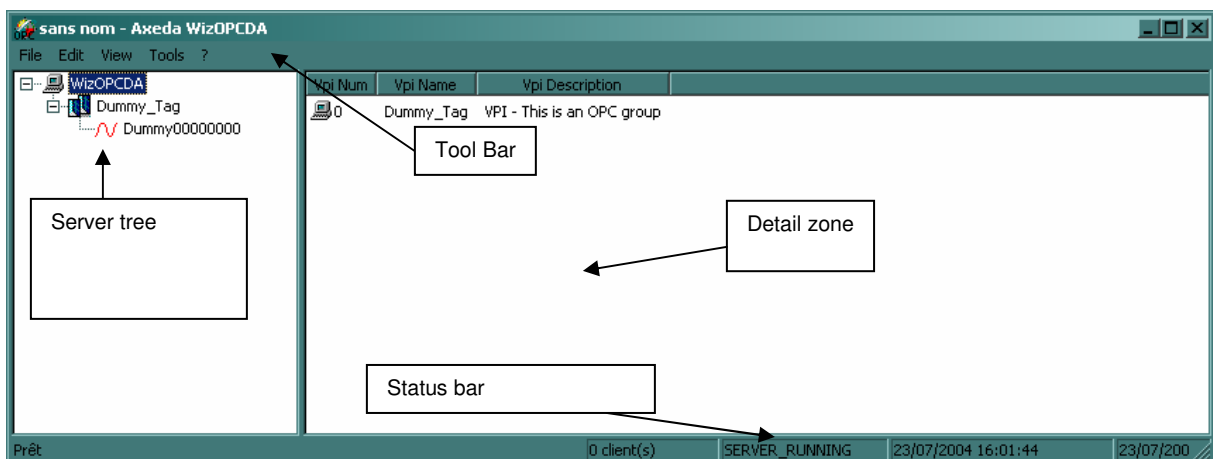
## Complementary specifications

- OPC Data Exchange – OPC DX
- OPC XML Data Access
- OPC Automation DA, A&E, HDA

# Wizcon OPC DA Server (WizOPCDA)

## User Interface

The OPC DA server for Wizcon is a 32bit application similar in appearance to Windows explorer. It will automatically display all the Wizcon application tags in use. The OPC DA server user interface consists of 4 parts as shown below:



### File Menu

The OPC DA server for Wizcon uses the **sda** filename extension. The server configuration does not affect the OPC data base, only the current options and the configuration display.

### Save

Will enable to save the current configuration in an sda file. If none of the configuration file is associated with the running application, the following dialog box will appear and will enable you to choose the configuration file name.

### Open

Will enable you to change a previously save configuration. If a configuration is already loaded, the usual options are modified and a shutdown message is sent to all the connected clients and the new configuration is loaded instead.

### Last file

The last four configuration files are saved in this list.



## Exit

Will send a Shutdown message to all the connected clients and will shut the application down.

## Edit menu

Not currently available.

## View menu

## Status bar

Will allow to display or remove the Status Bar

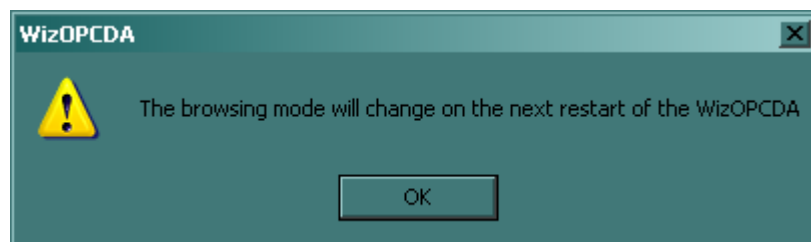
## Hierarchical/Flat

The OPC DA server for Wizcon can display its address space in one of two formats:

Hierarchic

Flat

This menu allows you to select the address mode you request. The modifications will only be applied once you restart.



## Tools menu

## Monitor

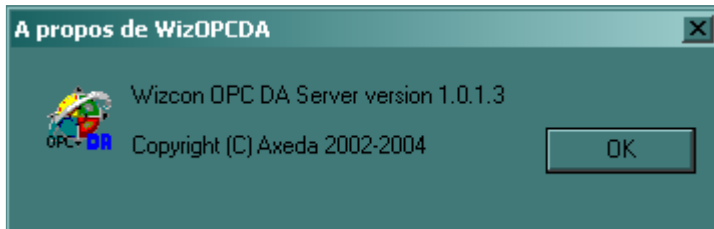
This will allow the activation of the monitoring mode. Using this mode, the detailed view, for the tags/items will show value in real time.

Item Name	Item Description	Item Type	Item Value	Item Quality	Item Timestamp
DIGI01		VT_BOOL	1	Good	23/07/2004 14:38:29.421
ANA01_FLOAT		VT_R4	1358.321045	Good	23/07/2004 14:39:07.640
ANA01_S32		VT_I4	2451.000000	Good	23/07/2004 14:39:35.671
ANA01_NS32		VT_UI4	574.000000	Good	23/07/2004 14:38:54.265
ANA01_S16		VT_I2	251.000000	Good	23/07/2004 14:39:49.093
ANA01_NS16		VT_UI2	12.000000	Good	23/07/2004 14:38:37.578
WIZRPL_NOGATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_PLAYBACKTIME	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_PLAYBACKDATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_STEP	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_DELAY	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_STARTTIME	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_STARTDATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_CONTROL	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZTGM_INDEX	Variable Index ...	VT_UI4	1.000000	Good	23/07/2004 14:01:55.703

## Help Menu

### About

The « About » dialog box, will display the server version you use.



## Status Bar

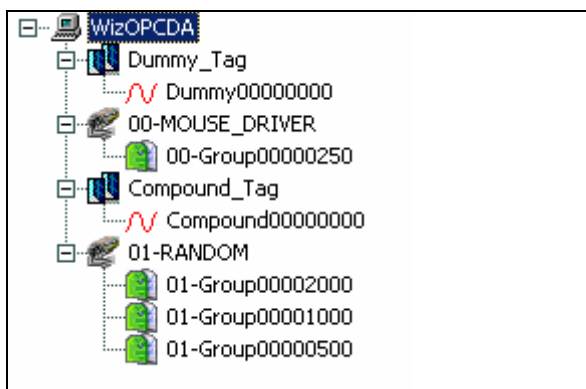
The status bar contains information regarding the OPC DA server for Wizcon and also some information regarding the status of your system buttons (CAPS LOCK, NUMERICAL LOCK, etc.)



Title	Description
Status	Will depend on the situation
Number of connected clients	
Server status	Internal server status
	: SERVER_RUNNING, SERVER_FAILED...
Start up time	When the DA server started.
Time	When the last information transmission to connected clients was
Link status with Wizpro	Indicates if the link with Wizpro is established

## Server tree

The OPC server for Wizcon will automatically build its server address space. It is then displayed on the tree on the left side of the user interface.



The tree splits the tags depending on their group and nature

- Dummy
- Compound
- PLC

Please refer to the server browser mode for more information.

## Detail zone

The detail view can show three different types of content depending on the tree level chosen in the server tree.

### Root level

Vpi Num	Vpi Name	Vpi Description
0	Dummy_Tag	VPI - This is an OPC group
1	00-MOUSE_DRIVER	VPI - This is an OPC group
2	Compound_Tag	VPI - This is an OPC group
3	01-RANDOM	VPI - This is an OPC group

### Branch level

Group Num	Group Name	Group Description	Items
0	01-Group00002000	WizOPCDA sampling group	1
1	01-Group00001000	WizOPCDA PLC group	2
2	01-Group00000500	WizOPCDA PLC group	1

### Tags/items level

Item Name	Item Description	Item Type	Item Value	Item Quality	Item Timestamp
DIGI01		VT_BOOL	1	Good	23/07/2004 14:38:29.421
ANA01_FLOAT		VT_R4	1358.321045	Good	23/07/2004 14:39:07.640
ANA01_S32		VT_I4	2451.000000	Good	23/07/2004 14:39:35.671
ANA01_NS32		VT_UI4	574.000000	Good	23/07/2004 14:38:54.265
ANA01_S16		VT_I2	251.000000	Good	23/07/2004 14:39:49.093
ANA01_NS16		VT_UI2	12.000000	Good	23/07/2004 14:38:37.578
WIZRPL_NOGATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_PLAYBACKTIME	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_PLAYBACKDATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_STEP	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.718
WIZRPL_DELAY	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_STARTTIME	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_STARTDATE	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZRPL_CONTROL	RePlay control tag	VT_UI4	0.000000	Good	23/07/2004 14:01:55.703
WIZTGM_INDEX	Variable Index ...	VT_UI4	1.000000	Good	23/07/2004 14:01:55.703

## Systray

Systray is the icon representing a program on the task bar, in the bottom right corner of your screen. The picture below shows the Systray. On this picture the systray from the OPC Data Access server for Wizcon is the furthest to the left. When you put your pointer on it the following message will: « Axeda Wizcon OPCDA Server »

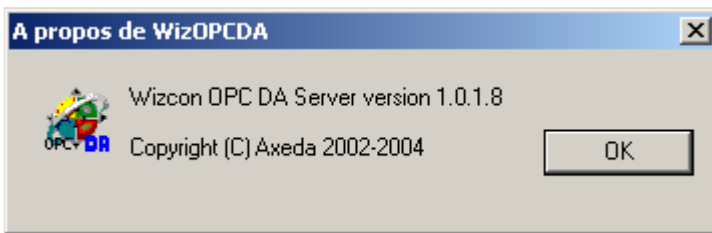


If you click on the mouse right button, the following menu will appear, offering three choices: About, Show/Hide and Exit.



## About

This option displays the « About » dialog box concerning the OPC DA server for Wizcon.



## Show/Hide

This option lets you show or hide the OPC server user interface. Your access to this menu will depend on the parameter « OPCDA\_HMISVR\_VISIBLE » set up in Witztune.dat file

## Exit

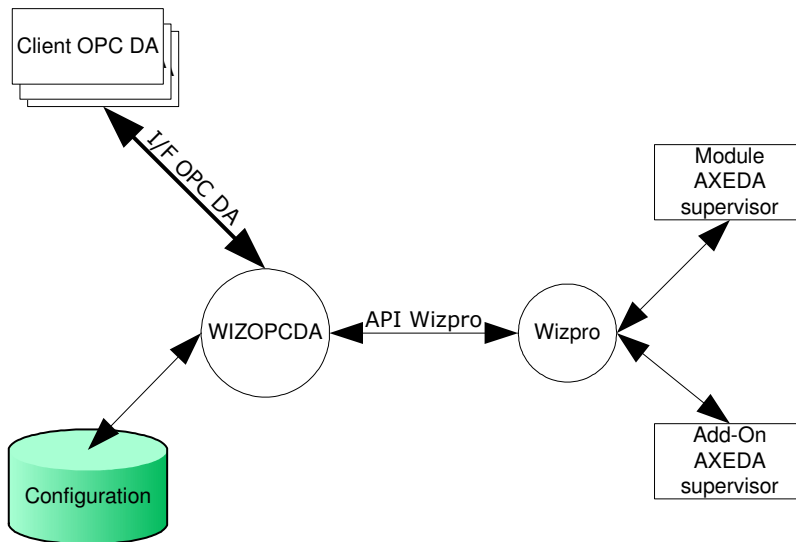
This option stops the OPC server. It will display a SHUTDOWN message to all the OPC clients. Your access to this menu will depend on the parameter « OPCDA\_HMISVR\_VISIBLE » set up in Witztune.dat file.

## Server address space

## Overview

The OPC Data Access server for Wizcon, WizOPCDA, follows the OPC DA 1.0 to OPC DA 2.05a specifications. It exposes all the Wizcon tags to OPC using the OPC interfaces.

## Flow



WizOPCDA can be started before Wizcon. It will automatically configure its address space from the running database in the Wizcon application.

## Items OPC name

The item names shown by the server are built according to the location or the item name.

Variable type:

- Dummy (OPC Branch)
- Compound (OPC Branch)
- PLC (OPC Branch)
- Sampling frequency (OPC Branch)
- Wizcon tag name

So the format for the items names is as follows:

VV-DDDDDDDDDD.NN-Groupxxxxxxx.TAGNAME with:

VV	= VPI Number, not for dummy and compound
DDDDDDDDDD	VPI Name <i>Dummy Tag</i> for dummy and <i>Compound Tag</i> for the others
NN	System Tag for internal tags Branch number (internally generated )

Xxxxxxxx	Sampling frequency associated to this tag in Wizcon.
TAGNAME	Tag name Wizcon

Examples:

Description in Wizcon	OPC item name
ANA01, Dummy	Dummy_Tag.Dummy00000000.ANA01
TAG address X in <b>Mouse Driver</b> from Wizcon. <i>Reading speed 250ms</i>	00-MOUSE_DRIVER.00-Group00000250.VALUE_X
Compound Tag001	Compound_Tag.Compound00000000.COMPOUND001

## Flat address

To remain compatible with applications from previous versions of OPC DA server for Wizcon. WizOPCDA is able to show both a flat and hierarchical address space. To switch from one to the other you can use the View menu (see previous section). The flat address mode should only be used to guarantee the compatibility with existing applications. We advise you to use the hierarchical address mode. When using the flat mode, the IHM is displayed as shown below. In this mode, the items name matches exactly the tag name in Wizcon.

Item Name	Item Description	Item Type	Item Value	Item Quality	Item Timestamp	Vpi Num	Vpi Name	Vpi Description
RV RANDOM004	Random float	VT_I2	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV RANDOM003	Random 16 bits ns	VT_UI2	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV RANDOM002	Random float	VT_R4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV RANDOM001	Random 16bits signé	VT_UI2	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV COMPOUND001		VT_I4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV VALEUR_Y		VT_R4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV VALEUR_X		VT_R4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV DIGI01		VT_BOOL	0	Bad Last known Val	01/01/1601 00:00:00.000			
RV ANA01_FLOAT		VT_R4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV ANA01_S32		VT_I4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV ANA01_NS32		VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV ANA01_S16		VT_I2	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV ANA01_NS16		VT_UI2	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_NOG...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_PLA...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_PLA...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_STEP	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_DELAY	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_STA...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_STA...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZRPL_CON...	RePlay control tag	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			
RV WIZTGM_INDEX	Variable Index Ta...	VT_UI4	0.000000	Bad Last known Val	01/01/1601 00:00:00.000			

## Data type match

As described in the OPC specification, the variable data type is VARIANT. The Wizcon tags are changed using the match shown below:

Type Wizcon	Type OPC
WIZ_GT_FRMT_DIGITAL	VT_BOOL
WIZ_GT_FRMT_UNSIGNED16	VT_UI2
WIZ_GT_FRMT_SIGNED16	VT_I2
WIZ_GT_FRMT_BCD	VT_I2
WIZ_GT_FRMT_FLOAT	VT_R4
WIZ_GT_FRMT_UNSIGNED32	VT_UI4
WIZ_GT_FRMT_SIGNED32	VT_I4
WIZ_GT_FRMT_STRING	VT_BSTR

## Item properties

WizOPCDA represents 9 properties for each item. These properties are as follows:

ID	Type	Description
1	VT_I2	Item type
2	<dépend du type de l'item>	Item value
3	VT_I2	Item quality
4	VT_DATE	Date and time
5	VT_I4	Access type to Items
6	VT_R4	Maximum interrogation frequency held by the server.
101	VT_BSTR	Item description
102	VT_R8	Maximum value
103	VT_R8	Minimum value

## Item quality

Wizcon does not take into account the quality as defined by the OPC DA specification. The server will then change the OPC quality from the current status of the tag in Wizpro. The initial value for the OPC quality is: OPC\_QUALITY\_LAST\_KNOWN.

## Server running modes

The WizOPCDA server can run according two modes:

- As an independent application
- As an automatic application

Therefore it is not necessary to manually start the server, you can let the OPC Data Access clients the server launching.

## Using the Master/Backup mode from Wizcon

No action is required. The server will continually display the data available from Wizpro.

### WIZTUNE.DAT file

#### OPCDA\_DATASVR\_RAW

##### Description

This parameter will indicate whether the data given to the clients are the raw or engineering values.

Parameter	Description	Value
OPCDA_DATASVR_RAW	The raw data will be sent to clients. <b>(Default Value)</b>	TRUE
OPCDA_DATASVR_RAW	The engineering data will be sent to clients.	FALSE

##### Example

OPCDA\_DATASVR\_RAW = TRUE

#### OPCDA\_HMISVR\_VISIBLE

##### Description

This will indicate if the OPC DA server for Wizcon user interface will be visible during use. When the 'user interface is invisible, it will be impossible to have access to the Show/Hide and Exit menus.

Parameter	Description	Value
OPCDA_HMISVR_VISIBLE	The user interface will be visible and the Show/Hide menus can be used	TRUE
OPCDA_HMISVR_VISIBLE	The user interface will be invisible and the SysTray menus will be greyed-out <b>(default value)</b>	FALSE

##### Example

OPCDA\_HMISVR\_VISIBLE = TRUE

## Compatibility



The OPC A&E client for Wizcon is compatible with Wizcon 8.2 and above. The OPC DA server for Wizcon is compatible with the CTT published by the OPC foundation under normal testing conditions.

## ***Server ProgID***

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The OPC server ProgID is: AXEDA.OPCDA.1

## ***Description***

---

“Vendor Info” OPC is:  
***Axeda Supervisor OPC DA Server***

## ***Tips and Tricks***

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- To start the application you can double click in a \*.sda file in Windows Explorer
- WizOPCDA <\path\filename.sda> will launch the client with a configuration
- The OPC DA server for Wizcon can be started before Wizcon.

## ***Known bugs and characteristics***

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### **Description**

When the Wizcon database is modified on line the update is not always done in the server Data Access.

### **Solution**

Restart the server

---

# OPC DA Client (VPIWNOPC)

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## *Understanding OPC DA*

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The best way to understand the Data Access OPC specification is to compare to the printer driver for DOS and Windows. For DOS printing each application writer should make a driver for each printer type to run its application. For example the AutoCAD application provided different drivers for each printer type. WordPerfect worked in the same way. But the AutoCAD drivers were not compatible with WordPerfect drivers. The software suppliers also had to provide drivers for the printers but also for all the other equipment they wanted to communicate with, including PLCs. SCADA Software suppliers had to develop hundreds of communication drivers and of course these drivers could not be shared between the different suppliers.

Windows solved this problem by integrating the printer drivers in the operating system, so a driver can be shared between several applications. Furthermore, the printer driver is designed by the supplier who also provides the accompanying equipment, hence the efficiency and optimal quality. The Windows architecture allows the creation of technological and industrial communication drivers. So in such an environment SCADA software is an OPC DA client and the PLC suppliers create OPC DA servers.

## *VPIWNOPC mechanisms*

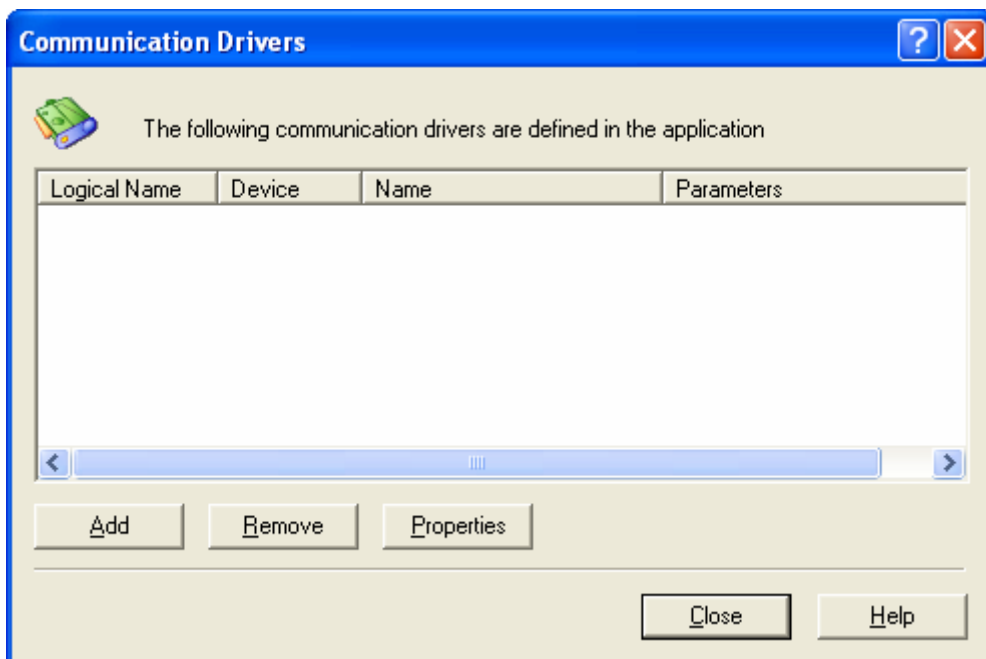
---

VPIWNOPC is an OPC Data Access (DA) client which efficiently uses the different characteristics of the OPC DA 2.05a specification. This OPC client is compatible with OPC DA 1.0 to 2.05a servers.

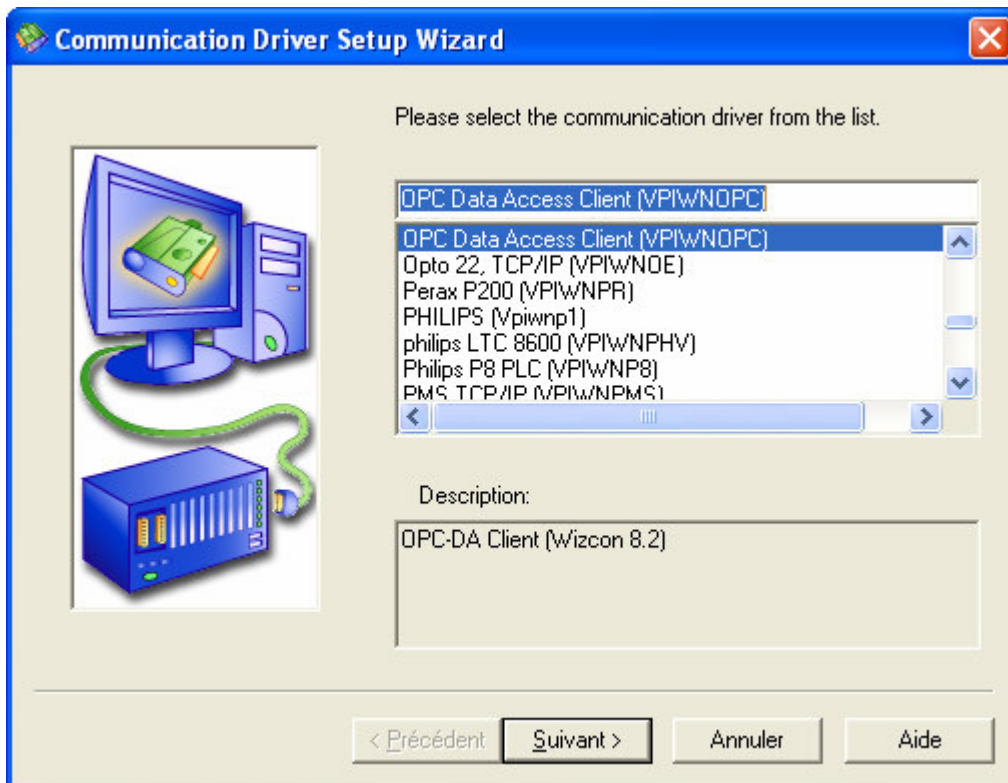
## *Installation*

---

The OPC client for Wizcon is installed in the same way as any other VPI. Click on the communication driver icon in the Wizcon studio and the following dialog box will appear.

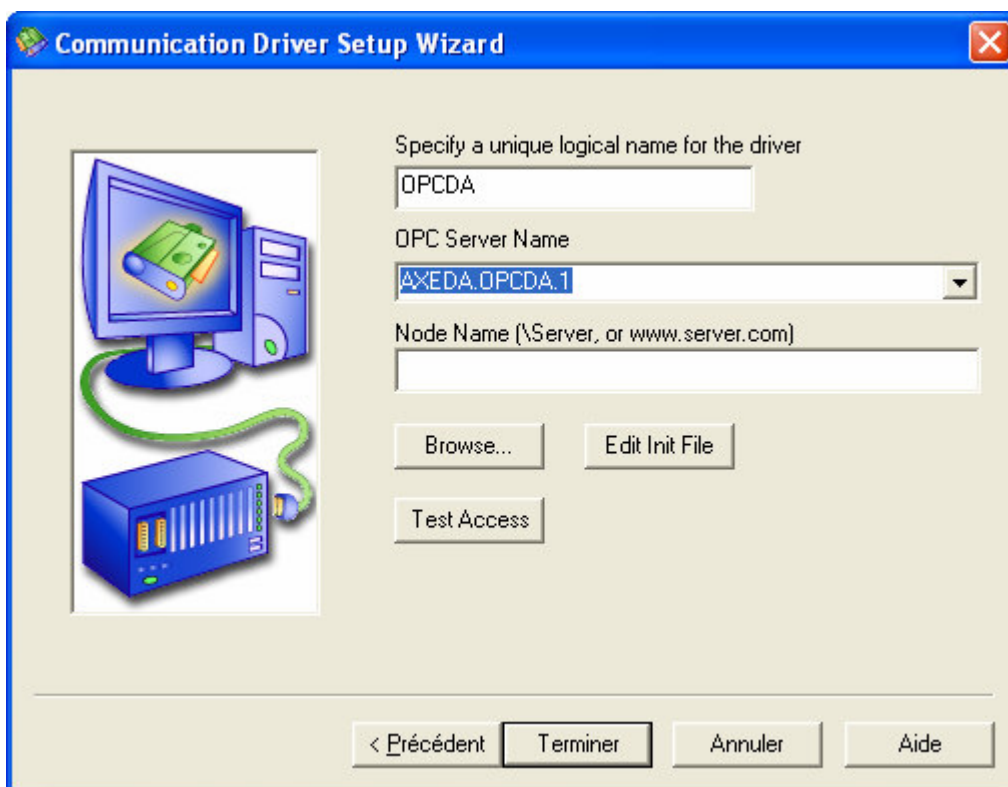


Then click on driver list to select a driver and choose « *OPC Data Access Client (VPIWNOPC)* » then click on Next.

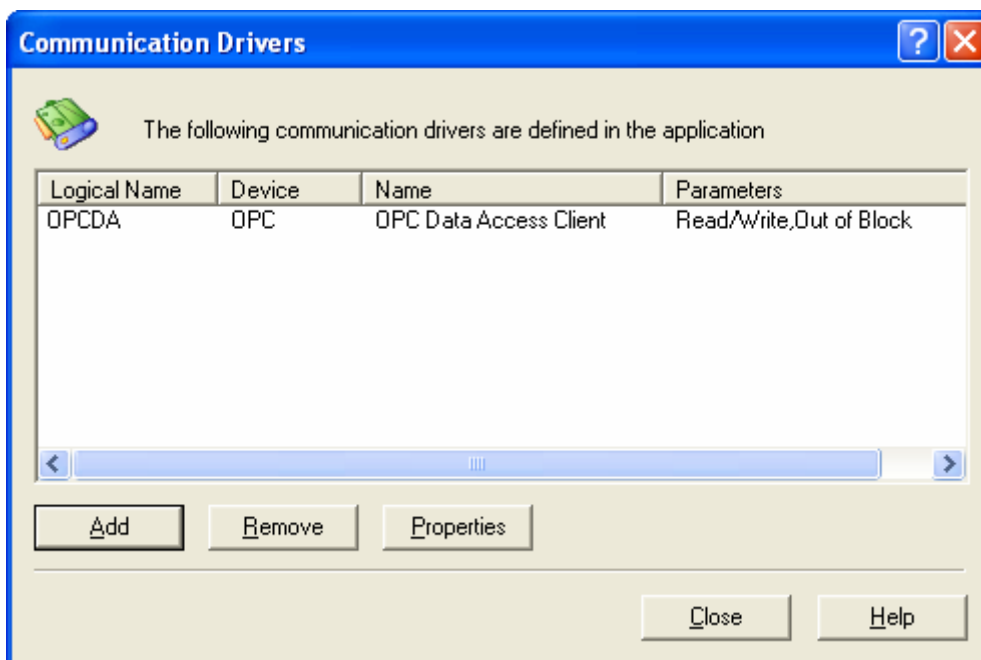


Enter a logical name for the VPI. Then enter the name of the OPC DA server to which you want to connect. You can either enter the OPCserver ProgID or use the combo-box which will display the

list of all the OPC servers available on this station. If you enter the name of a server node, the combo-box will display the list of all the servers on the remote station.



Click on « Test access » to check that your connection to the server works.  
Click on « End » to finish installing VPIWNOPC.



You can use this VPI several times in order to connect to several OPC DA servers.

Once the VPI installation is finished, you must restart your Wizcon application.



During the definition phase with the OPC DA server, a configuration file is automatically generated by Wizcon. This file is called: VPIWNOPCxx.INT with xx= n° of VPI. For more information, please refer to “configuration options” section.

## ***Associating Wizcon Tags with OPC Items***

---

### **Creating a new Tag**

The process of creating an OPC DA tag is identical to creating a tag connected to any other driver. Once the dialog box appears, select the source PLC and replace the driver with the name of the driver previously set (see: VPIWNOPC installation).

**Tag Definition: NEW Tag**

General | Record | DDE Link | Lock | WizPLC | Alarms

Tag Name:  Groups...

Description:

Tag Source:

Driver:

Address:  ...

Sample

☒ Never ☐ In Monitor ☐ Always

Sample Rate:  sec.  ms.

Tag Type:

Format:

Tolerance:

Tag scale

Low Limit:


High Limit:

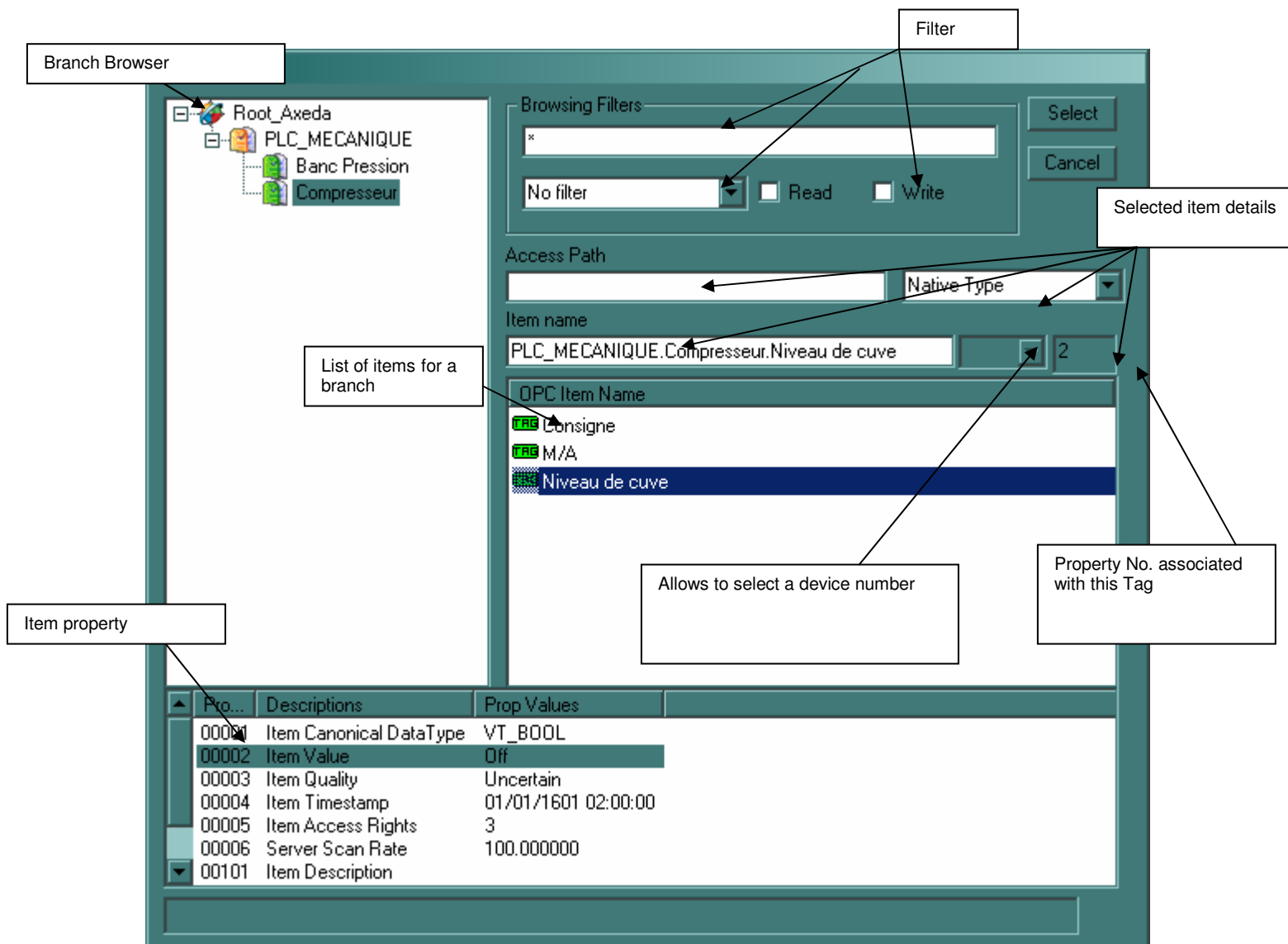
☒ Set Default

Conversion

	Measured	Engineering
Value 1	<input type="text" value="0"/>	<input type="text" value="0"/>
Value 2	<input type="text" value="1"/>	<input type="text" value="1"/>

OK Annuler Appliquer Aide

Click on  to browse the OPC DA configuration.  
This « browser » is a dialog box enabling you to select an OPC item and to associate it with a Wizcon tag



## Branch Browser

This section contains all the branches available in OPC DA sever. This tree is visible only for the servers which support the IOPCBrowseServerAddressSpace interface. This interface is optional and not all OPC DA servers have it.

## List of items for a branch

This section contains the list of items for a selected branch. If the OPC server does not have the IOPCBrowseServerAddressSpace interface, all the items are kept on the same branch.

## Item property

This section of the dialog box is associated with each item. When you select an item, you will see the list of item properties handled by your server. Not all OPC DA servers can handle this interface. It is a mandatory interface since the OPC DA 2.0 specification. If dealing with an OPC 1.0 and 1.0a server this zone will be empty.

## Filters

Three kinds of filters are available to select items:

1. *Name filter*  
*This filter handles wildcards « \* » and « ? » and all alpha-numerical data.*
2. *Type of variable filter*  
*Float, BOOL, Short...*
3. *Access type filter*  
*Read, Write, Read/Write*

*The filtering is done by the server. The OPC client handles requests to the OPC DA server.*

## Selected item details

The association between a Wizcon Tag and an OPC Item is made of the item name, the access path, the item type and the number of the item property. This association represents the Wizcon address for this tag. It is used by the VPIWNOPC for its connection with the OPC server.

**Access Path:** Some servers might use the access path to find the access path to an item.

**Item name:** The complete OPC item name as displayed by the server.

For example: Device1.Meca01.Etat-Sous-Systeme

**Item type:** The type of data you want to receive in the Wizcon tag. In fact you do not have to use the item type since you can ask the OPC server to convert the data before their transmission, but not all servers will handle this. If you use the type “native”, the server will return the canonical type. *Index(Table)*

Wizcon does not handle the type “table”. In order to allow Wizcon to connect to OPC servers using tables, the VPIWNOPC will enable you to build a link between the index of an OPC item VT\_ARRAY (Table) and a Wizcon Tag. In this case the index list is available in the combo-box.

**Property Number:** VPIWNOPC allows you to associate not only a value held in an item but also any other property. The OPC foundation has defined around 300 properties standards which can be used in a server. 6 properties are mandatory (1...6) and must be implemented in all post version 2.0 OPC DA Servers.

## Modifying a Tag

---

To modify the association between a Wizcon tag and an OPC item you have to open the « browser » and select new association options. You can also type the new association details directly into the address field.



## Matching Wizcon Types with OPC types

VPIWNOPC can change any OPC type into Wizcon type. The table below shows the mapping between the different types.

OPC Type	Wizcon Type	Comments
VT_UI2	WIZ_GT_FRMT_UNSIGNED16	
VT_I2	WIZ_GT_FRMT_SIGNED16	
VT_I2	WIZ_GT_FRMT_BCD	
VT_R4	WIZ_GT_FRMT_FLOAT	
VT_UI4	WIZ_GT_FRMT_UNSIGNED32	
VT_I4	WIZ_GT_FRMT_SIGNED32	
VT_BOOL	WIZ_GT_FRMT_DIGITAL	
VT_BSTR	WIZ_GT_FRMT_STRING	
VT_R8	WIZ_GT_FRMT_FLOAT	Wizcon cannot handle the VT_R8 type, a conversion is made internally.
VT_DATE	WIZ_GT_FRMT_STRING	Wizcon cannot handle the VT_DATE type. Dates are changed into a string of characters.
VT_ERROR	WIZ_GT_FRMT_SIGNED32	
VT_ARRAY   ?????	Type ????	Each item VT_ARRAY   VT_R4 type will be sent to Tag WIZ_GT_FRMT_FLOAT

Type conversion can be a problem. Take time to check that the type sent by the server matches the type given in Wizcon.

From version 1.0.5.73, VPIWNOPC will use the type which has been set as a parameter in Wizcon as a reference type. The client will no longer ask the server for the canonical type but will use the one set up in the matching Wizcon tag. The server will do the conversion to provide the expected format for a given value. If the server cannot handle a given type it will send an error message to the client.

## Reading mechanism

VPIWNOPC uses the « Callback » notification mechanism. This means that VPIWNOPC creates groups to which it subscribes depending on the sampling frequency of the items. VPIWNOPC does not send a reading request each time.

For the OPC 1.0 servers, the server will send an asynchronous request to read in order to guarantee a better synchronization between Wizcon and the OPC servers.

The VPI initialization goes through the following steps:

1. Creation of the internal database (item, group) depending on calls to SingleParse.
2. Taking subscriptions for all the groups and for all the items.  
(Inactive groups and items)
3. Activating groups and items
4. Refreshing the database
5. Receiving status changes and updating the Wizcon database.

---

## Writing mechanism

---

VPIWNOPC can handle two writing mechanisms

1. **Synchronous.** This must be selected in VPIWNOPCxx.INT WriteSync=TRUE.
2. **Asynchronous.** This is the default writing mechanism WriteSync=FALSE.

Asynchronous writing is the safest method because the VPIWNOPC cannot be locked and leaves the application running.

---

## Handling server errors

---

VPIWNOPC regularly checks the server status. If the server does not respond fast enough, the VPIWNOPC will disconnect and free its resources. It will try to connect every minute.

The servers can also inform the clients that they have stopped.

---

## Working with a network

---

The OPC DA client can connect to any OPC server, on the local machine or across a network. If you want to use a server on a different machine you must check the following points:

- That you have installed the OPC Core components on the network machine
- You have the correct access rights on this machine

During the connection to the OPC server, VPIWNOPC uses the OPCEnum.exe component. You must check that it is correctly installed. Once this is done, you must check that you have the correct authorization and launch rights on the server machine. Use DCOMCNFG.exe for this. Refer to the Appendix for details of how to do this.

---

## Configuration options

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### VPIWNOPCxx.INT file

The VPIWNOPCxx.int file enables you to set up parameters associated with each VPI instance. The first two lines of this file are generated by Wizcon; the other two options can be added manually depending on your needs. If an option is missing, the default value will be used.

**SERVER=PROGID**

**NODE=AAAAAAAAAAAAAAAA**

Name of the server node

**WriteAck=TRUE/FALSE**

By default = FALSE

If the chosen value is TRUE, VPIWNOPC will execute an asynchronous read of the OPC server.

**WriteSync=TRUE/FALSE**

By default= FALSE

To activate or deactivate synchronous writing:

**REFRESH\_ON\_ACTIVATE** = FALSE or TRUE

By default= FALSE

**TIMEBIAS** = X

The time bias is specified in minutes. It represents the value added to the time sent to the client. (Default = 0).

Note: all the OPC servers send their date and time in GMT. The VPIWNOPC will adjust the time sent by the OPC servers to read local time based on the specified time bias.

**INIT\_STATE** = AAAAAAAAAAAAAA

This is a string of letters used by the client to make sure that the server is ready. This parameter allows you to synchronize the client and server.

VPIWNOPC will wait for this string to be sent back by the server before building its database in real time.

You will see the following data:

OPC STATUS RUNNING	Value by default
OPC STATUS FAILED	
OPC STATUS NOCONFIG	
OPC STATUS SUSPENDED	
OPC STATUS TEST	
OPC STATUS COMM FAULT	
NOT SET DEFAULT VALUE	

**INIT\_TIMEOUT** is a numeric value, in milliseconds, representing the time during which the client will have to wait for the OPC server to start (default value = 60000).

**THREADING\_MODEL** = Represents the threading model used by VPIWNOPC. Even if certain OPC servers are not compatible with MULTITHREADING model, it is better to use this model for maximum performance.

The possible values are:

- MULTITHREADING
- APARTMENT

By default: APARTMENT.

**LOCK\_CALLBACK\_ONWRITE** = The VPIWNOPC includes a mechanism to avoid rebounds of the data when writing. This parameter will allow this mechanism to be deactivated.

TRUE	Activate the anti-rebound mechanism	Default value
FALSE	Deactivate the anti-rebound mechanism	

**DELAY\_AFTER\_CONNECT** = Represents the time in milliseconds, during which the OPC client will wait before building its database. This parameter is particularly useful when the OPC servers are started using the Embedded method.

Default value: 1000

**READ\_ON\_DEMAND** = to activate reading on request.

TRUE	Activate reading on request	
FALSE	Deactivate reading on request	Default value

This mode is useful when you want to use Wizcon recipes and when the VPIWNOPC update parameters are used by the OPC sever to define sampling frequencies.

Here is an example of a VPIWNOPCxx.INT file

```
SERVER = OPCModbus.4CE.1
NODE =
WriteSync = TRUE
REFRESH_ON_ACTIVATE = FALSE
TIMEBIAS = 00
INIT_STATE = OPC_STATUS_RUNNING
INIT_TIMEOUT = 10000
THREADING_MODEL = MULTITHREADING
LOCK_CALLBACK_ONWRITE = FALSE
DELAY_AFTER_CONNECT = 5000
```

## Wiztune.dat file

The VPIWNOPC client is compatible with the OPC DA servers which handle OPC security. This means that the OPC client is able to connect to servers which handle the IOPCSecurityNT and IOPCSecurityPrivate interfaces. To enter the security parameters for a server, you have to add these lines OPC\_SECURITYxx\_USER OPC\_SECURITYxx\_PASSWORD in your Wiztune.dat file. Each line is associated with a particular user. You can add as many lines as you want.

```
OPC_SECURITY01_USER=Axeda\User
OPC_SECURITY01_PASSWORD=123456
```

## Compatibility

The VPIWNOPC driver only works with Wizcon 8.2 and above.

## Tricks and tips

1. Before establishing your connection, check your server by using a client test.
2. Use OPC servers compatible with the OPC specifications. The list of compatible OPC servers can be found on : [http://www.opcfoundation.org/05\\_products/05\\_self\\_cert.asp](http://www.opcfoundation.org/05_products/05_self_cert.asp)
3. In case of problems with writing use the Asynchronous writing mode using the option WriteSync=**TRUE**.

## Known bugs and characteristics

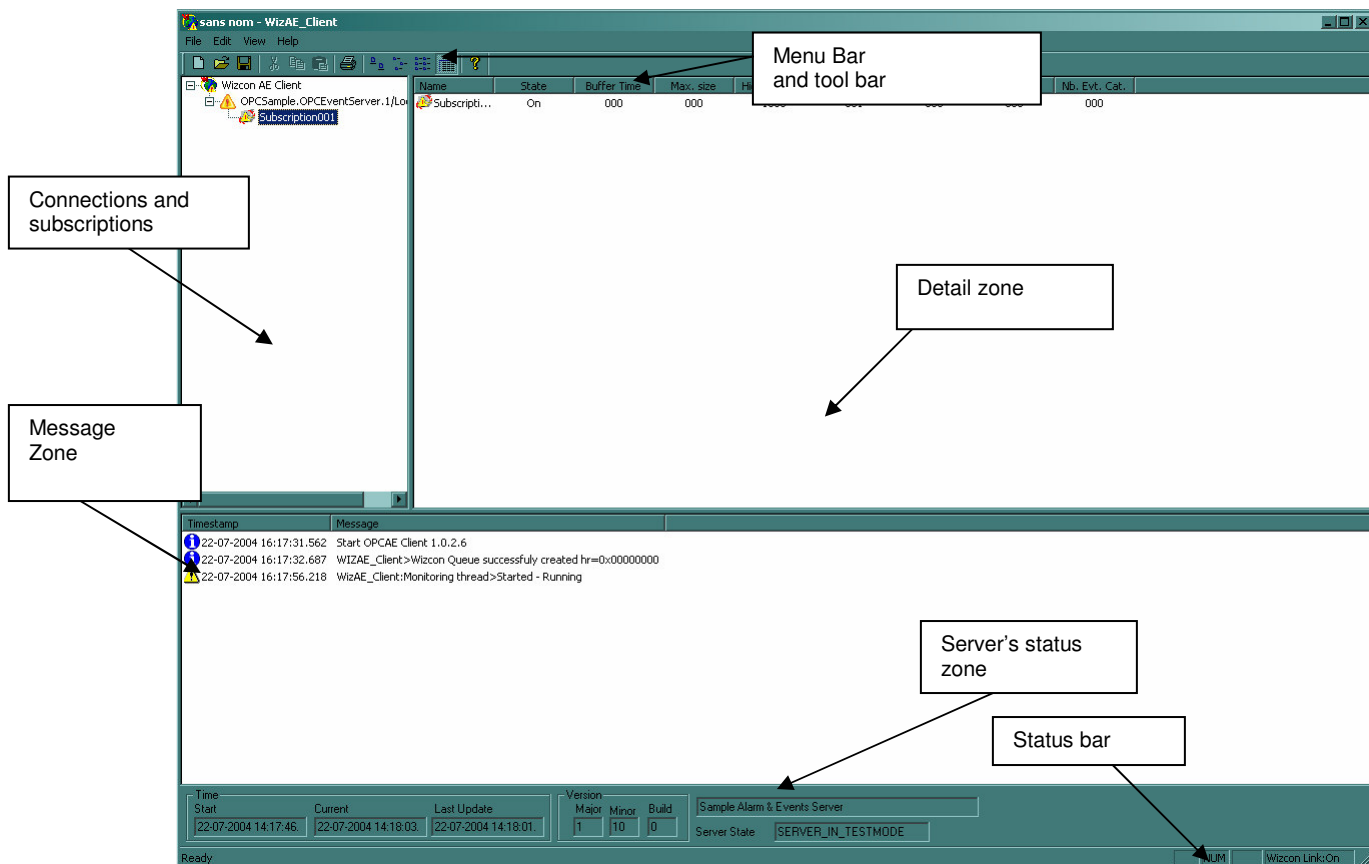
1. During tag reloading for modification, the selected group might be empty. Select another group and then come back to the initial group.
2. Some servers cannot handle filters on data types.

# OPC AE Client (Wiz\_AEClient)

The OPC Alarm and Event (A&E) client for Wizcon is a 32bit application which is similar in appearance to Windows explorer. It allows multiple connections and for each connection, several subscriptions.

## User Interface

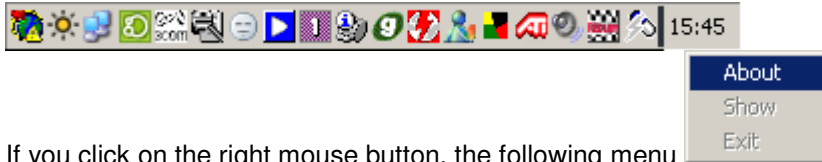
The OPC A&E Client for Wizcon consists of 6 parts, as shown below.



All the OPC operations performed by the client will be « serialized » which means that they are put in a queue by the client and a maximum delay is given to them in order to be done. This guarantees that the application will not be locked in case of communication errors.

## Systray

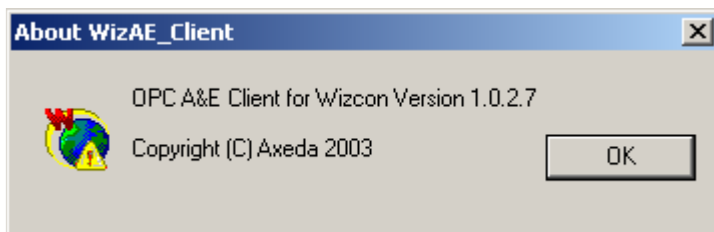
Systray is the icon which represents a program on the task bar, on the bottom right corner of your screen. The picture below displays the systray icons. On this picture the systray from the OPC AE Client for Wizcon is the furthest to the left. When you put your pointer on this zone the following message will be displayed: "Axeda Wizcon OPCAE Client".



If you click on the right mouse button, the following menu will appear, with three choices as follows: About, Show/Hide and Exit.

### About

This menu will display the dialog box « About » for the OPC AE client from Wizcon.



### Show/Hide

This menu enables you to show or hide the OPCAE client user interface. You can either display Show or Hide. To have access to this menu depends on the value of the parameter « OPCAE\_HMICLI\_VISIBLE » which is set in the file Wiztune.dat.

### Exit

Exits the WizAE\_Client. To have access to this menu will depend on the parameter « OPCAE\_HMICLI\_VISIBLE » which you will set up in the file Wiztune.dat.

## Menu bar and tool bar

### File menu

The OPC A&E client for Wizcon will enable you to manipulate WAE extension files.

### New

Will let you create a new configuration. If a configuration is already loaded, the connections to the servers are removed.

**Open**

Will let you load a configuration previously saved. If a configuration is already loaded, the connections to the servers are removed and the new configuration is loaded instead.

**Save**

Will save the configuration used in the active WAE file. If none of the WAE file has been associated with this configuration, the dialog box for file selection will be displayed.

**Save As**

Save the configuration in use in a new WAE file.

**Print**

Prints the configuration details.

**Print preview**

Displays a preview of the configuration to be printed.

**Print Setup**

To define printing parameters.

**Recent File**

Displays the most recently opened files in this program. To open one of these files, click on it.

**Exit**

To leave WIZAE\_Client and to close all the OPC A&E connections.

**Edit menu**

*Not yet available.*

**View menu****Toolbar**

To display or suppress the toolbar.

**Status bar**

To display or suppress the status bar.

**Help menu****About**

The dialog box « About », to display the version of the client you are using.

## **Connections and subscriptions**

---

The connections and subscriptions zone will enable you to set up the parameters for your OPC A&E connections and for your subscriptions. All the operations for setting up the parameters are done using pop-up menus. There are 3 pop-up menus, which are accessible depending on the current tree level.

### **Root level (Wizcon AE Client)**

#### **Cut**

*Not available in this version.*

#### **Copy**

*Not available in this version.*

#### **Paste**

*Not available in this version.*

#### **Add Server**

Enables you to add a new connection to an OPC A&E server.

### **Server level**

#### **Cut**

*Not available in this version.*

#### **Copy**

*Not available in this version.*

#### **Paste**

*Not available in this version.*

#### **Add Subscription**

Enables you to add a subscription to the connection that you have selected.

#### **Disconnect**

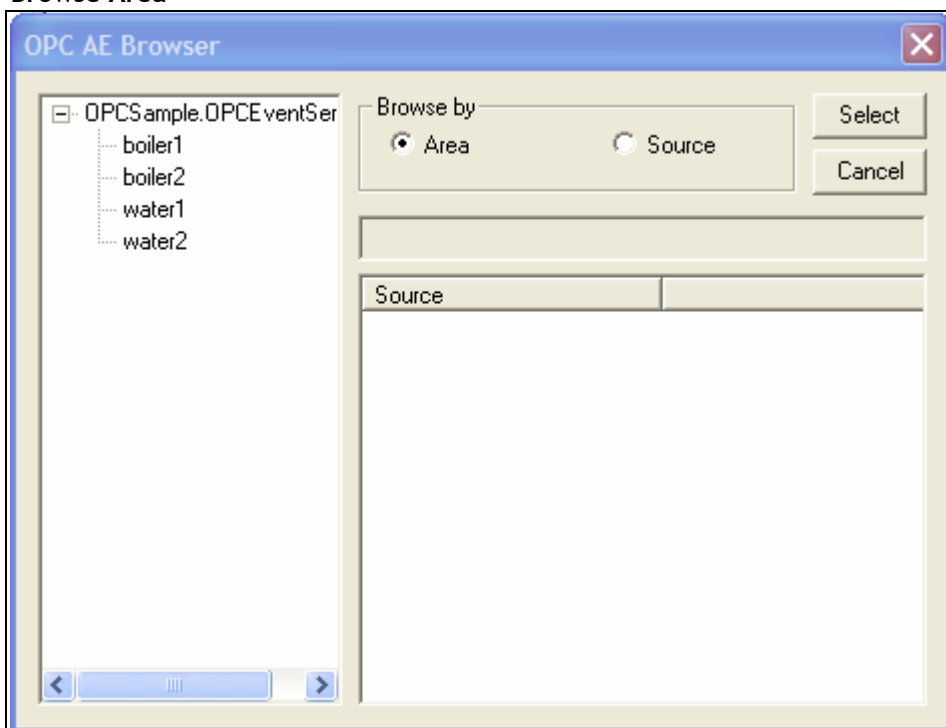
Disconnects the client from the server. When you select this menu all the subscriptions are removed.

#### **Server Status**

Enables you to ask for an update of the server status. This option updates the server status.



## Browse Area



Enables you to browse by « Area » for the selected server. The associated interfaces are optional in the OPC A&E specification.

Therefore, you will not be able to use this functionality on all the servers.

## Subscription level

### Cut

*Not available in this version.*

### Copy

*Not available in this version.*

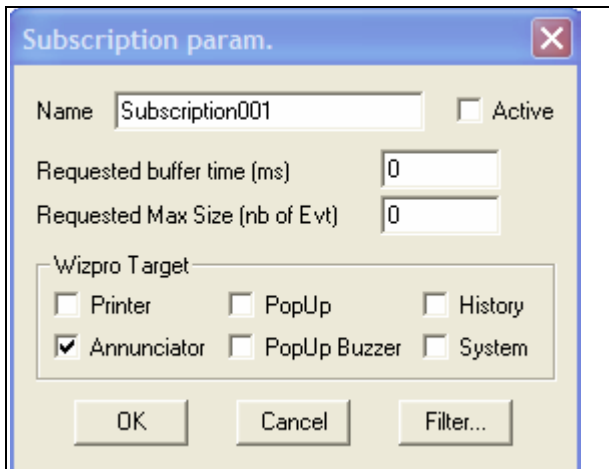
### Paste

*Not available in this version.*

### Remove Subscription

Enables you to remove the selected subscription.

## Subscription Parameter



Enables you to access the subscription parameter dialog box. Using this dialog box (see picture) you will be able to modify all the parameters linked to a subscription.

## Refresh

Enables you to ask the server to refresh all the active events in the server. Beware that this method is synchronized and the client will wait for an answer from the server or will timeout if they have to wait too long.

## Detail zone

The detail zone varies according to the selected level

### Details from the servers

When you select the root in the zone « Connections and subscriptions » you can see the list of servers to which you are connected. In this case the list is:

- NodeName
- Server ProdID
- Subscription number

### Subscription details

When you select a server or a subscription, the same detail view is displayed. The list will be as follows:

- Subscription name
- Subscription status
- Buffer Time
- Max. Time
- High severity
- Low severity
- Number of zones
- Number of sources
- Number of events categories

## Message zone

The message zone informs you on application message. It is made of two columns:

- The Icon showing the message severity
- The message date and time
- The message text.

When the message zone is full, it is saved in an ASCII file called « OPCAE\_Client.DAT ». This file is in the application registry.

## Server status zone

The server status zone contains all the available information obtained from IOPCEnterpriseServer ::GetStatus. The OPC A&E client for Wizcon triggers these files every second to update this zone. This zone contains the following information:

Start Time	
Last update Time	
Current Time	
Major Version	
Minor Version	
Build Number	
Server description	
Server state	

All this information displayed in this zone comes directly from the OPC A&E server that you have selected.

Time Start 22-07-2004 14:17:46	Current 22-07-2004 15:35:39	Last Update 22-07-2004 15:35:36	Version Major 1	Minor 10	Build 0	Sample Alarm & Events Server	Server State SERVER_IN_TESTMODE
--------------------------------------	--------------------------------	------------------------------------	-----------------------	-------------	------------	------------------------------	------------------------------------

## Status Bar

Ready	NUM	Wizcon Link: On
-------	-----	-----------------

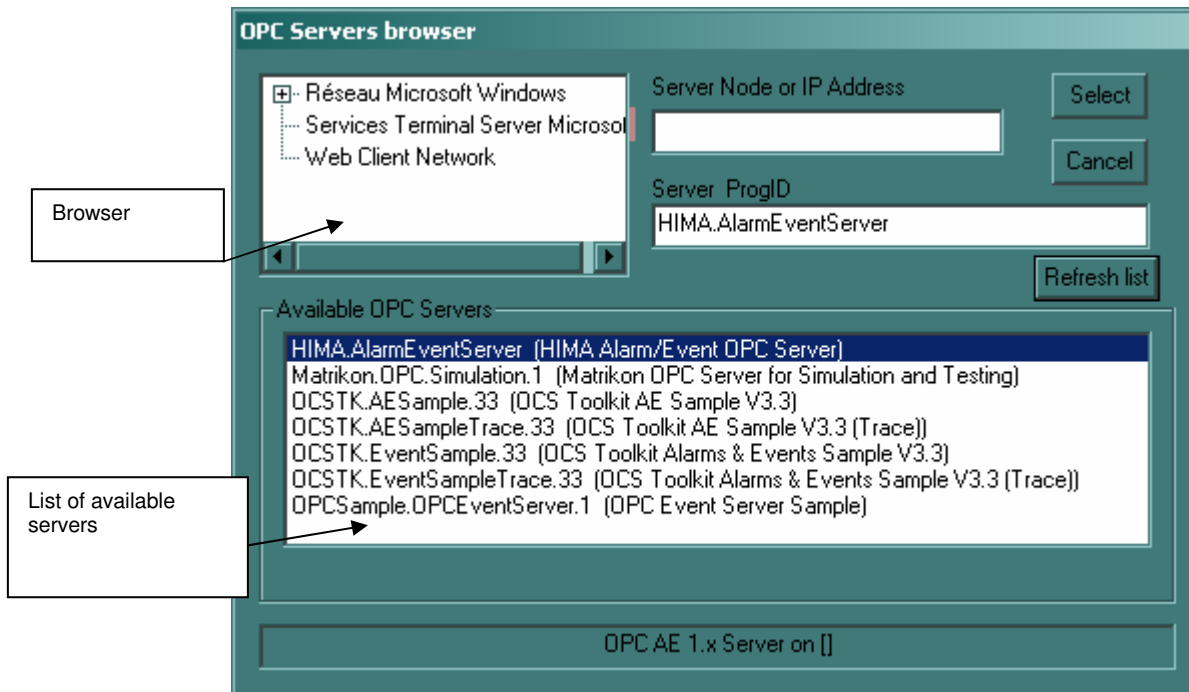
The status bar is at the bottom of the application window. It displays different information regarding the status of your operating buttons (CAPITAL letters, Numerical, etc.). The most important information is the status of the « Wizcon Link », which can display the following:

On	The link with Wizcon is active
Off	The link with Wizcon is stopped
Changing	The link with Wizcon is in transit
Internal Error	An error has occurred during the communication with Wizcon
Unknown	Unknown status

## Connection to an OPC A&E server

The OPC A&E client for Wizcon (WIZAE\_client) can handle several connections. This section will explain how to add a new connection on an OPC A&E server.

Click on the left mouse button whilst moving on the tree displayed on the zone « connection and subscription ». Then click on the right mouse button so that the pop-up menu will appear and select « add server ». The following dialog box will appear:



This dialog box enables you to make a local or distant connection an OPC A&E server. As soon as the dialog box opens, it will show the list of available servers for the computer on which « WIZAE\_Client » is installed. To make your connection select the server on which you want to connect and click on the « Select » button.

To make a connection on a server on another unit, you can use the browser window (left top corner of the dialog box). This window will enable you to select the unit on which you want to connect. Each time you want to select a new calculator, the OPC A&E client for Wizcon updates the list of servers. You can also enter directly the address IP of the unit you want to connect to in the field. « *Server Node or IP Address* ». Once this is done, click on « *Refresh List* » button.

Once the connection is made the following will be shown

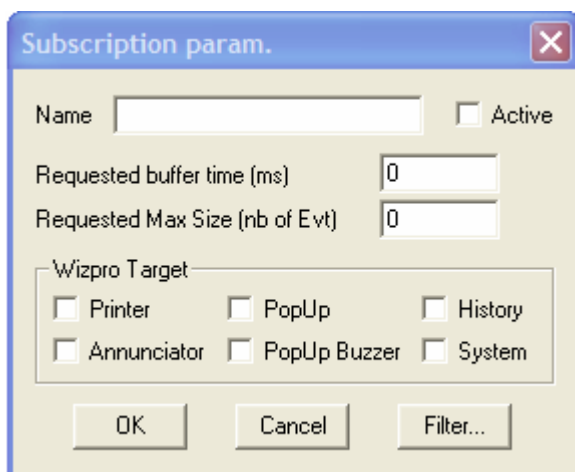


## Disconnection from an A&E server

To disconnect from the server, put your pointer of your mouse on the server you want to disconnect from and click on the left. Then click on the right to activate the « Popup » menu and then click on Disconnect. The disconnection is made immediately and all the subscriptions associated with this connection are also removed. The message zone will display the following message: « Server successfully disconnected hr=0x00000000 »

## Adding a subscription

For each connection, WIZAE\_Client can take several subscriptions. It is through the subscriptions that WizAE\_Client transmits the alarms and events to Wizcon. To add a new subscription on a server, put your pointer on the server and click on the right mouse button. Then select « Add Subscription ». The following dialog box will appear:



The dialog box titled "Subscription param." contains the following fields and controls:

- Name:** A text input field.
- Active:** A checkbox.
- Requested buffer time (ms):** A numeric input field with the value 0.
- Requested Max Size (nb of Evt):** A numeric input field with the value 0.
- Wizpro Target:** A group box containing six checkboxes:
  - Printer
  - Annunciator
  - PopUp
  - PopUp Buzzer
  - History
  - System
- Buttons:** OK, Cancel, and Filter...

## Dialog box description

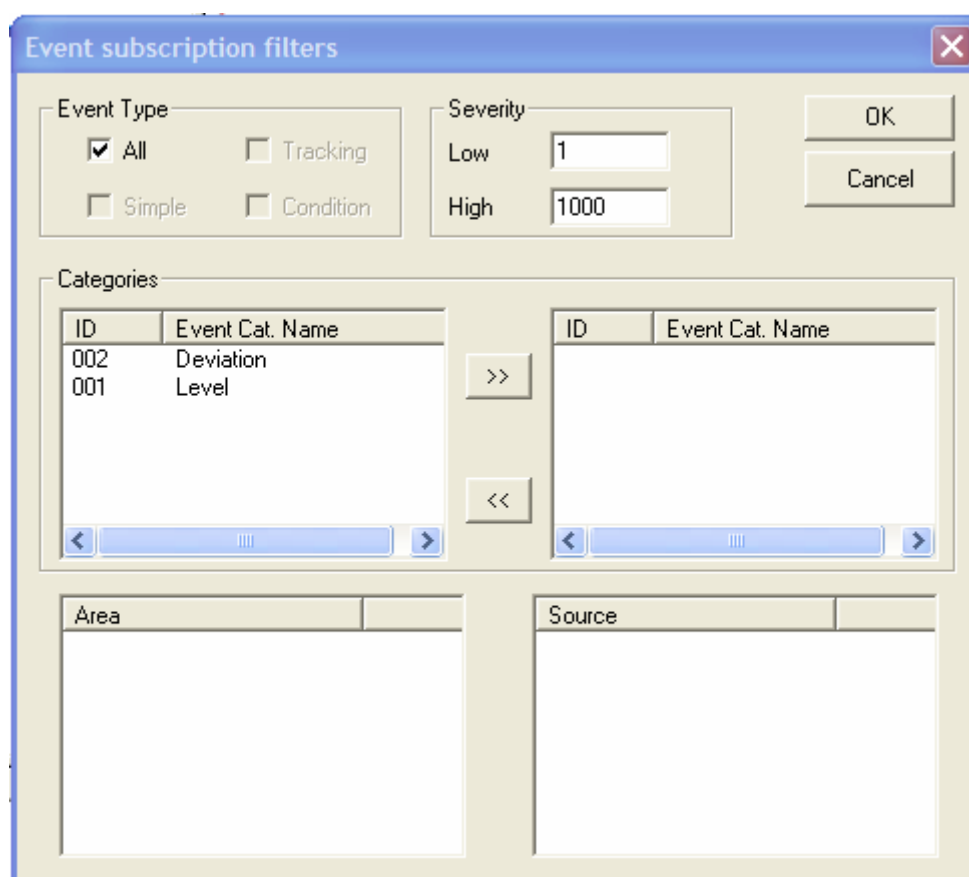
Name	Name you wish to give to this subscription
Active	Subscription status
Requested buffer time	Size of the maximum buffer between two notifications. If you type 0, the client will use the default value available on the server.
Requested max size	Maximum number of alarms received by the server before notifying the client. If you type 0, the client will use the default value available on the server.
Printer	Link with Wizcon - the alarms will be printed
Annunciator	The alarms will be displayed in the Wizcon Event

	Summary
PopUp	The alarms will be displayed in a pop-up window
PopUp+Buzz	The alarms will be displayed in a window and a buzz will be generated
History	The alarms will be kept in Wizcon archives
System	The alarms will be « System wide »

For all the options associated with Wizcon, please refer to the Wizcon alarms documentation.

## « Filter » button

The « Filter » button enables you to load the following dialog box.



The dialog box titled "Event subscription filters" contains the following sections:

- Event Type:** Includes checkboxes for "All" (checked), "Tracking", "Simple", and "Condition".
- Severity:** Includes input fields for "Low" (value: 1) and "High" (value: 1000).
- Buttons:** "OK" and "Cancel" buttons are located on the right.
- Categories:** Two list boxes with columns "ID" and "Event Cat. Name". The left list box contains:
 

ID	Event Cat. Name
002	Deviation
001	Level

 Between the list boxes are ">>" and "<<" buttons. Both list boxes have scroll bars at the bottom.
- Area and Source:** Two large empty text areas at the bottom, labeled "Area" and "Source".

This dialog box will enable you to put filter subscriptions. These will filter events depending on parameters as follows:

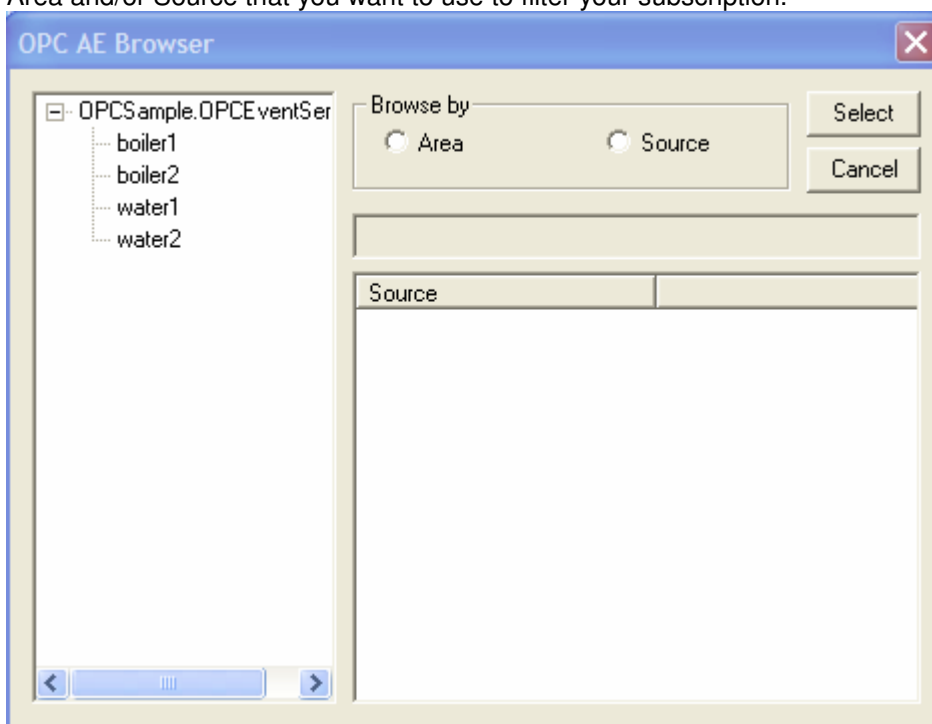
Event Type	Will enable you to choose the event type to be received in this subscription
Severity	Will enable you to define the minimum and maximum severity level to be used to filter received events during this subscription.
Category	The server displays the category of events you can use to filter

	your subscription
Area	The areas are optional in OPC A&E. If the server you use can support them, you can filter the received events using the areas
Source	The sources are the origin of the event. They can also be used to filter the events.

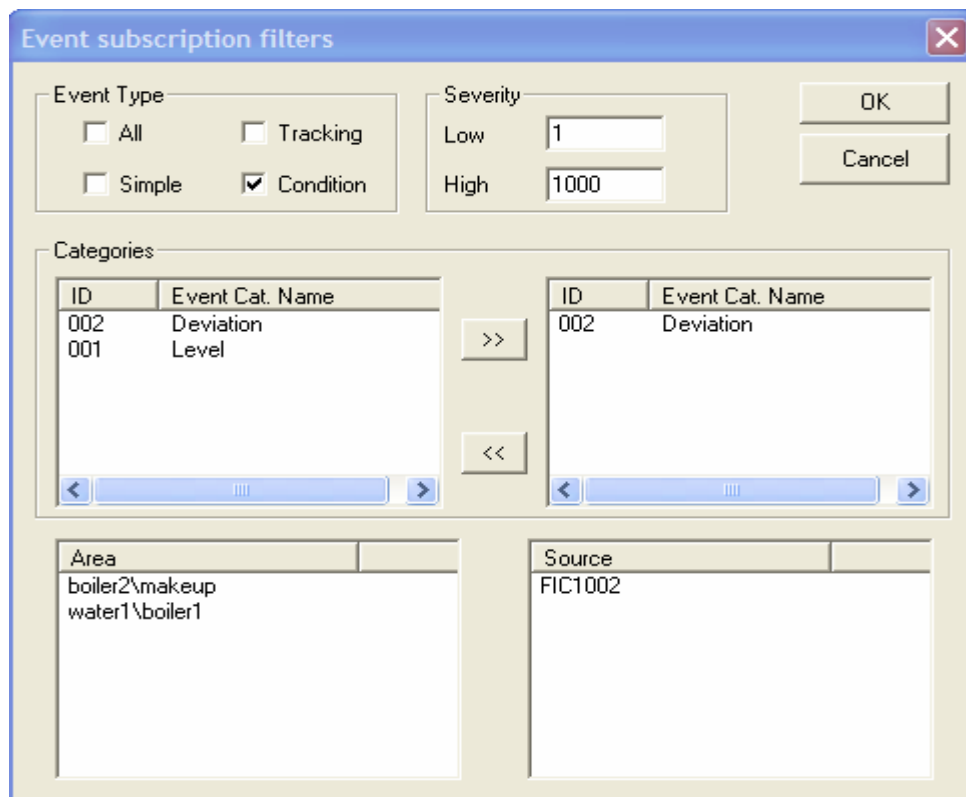
To filter following area or source, put your pointer in the requested zone and click on the right mouse button to display the following pop up menu.



Select Add Area or Add Source, and the following dialog box will appear. It will enable you to select Area and/or Source that you want to use to filter your subscription.



The screen below shows a subscription using all the filters. This subscription has been set up using the OPC Foundation OPC server.



**Event subscription filters**

Event Type

☐ All ☐ Tracking

☐ Simple ☒ Condition

Severity

Low

High

OK

Cancel

Categories

ID	Event Cat. Name
002	Deviation
001	Level

>>

<<

ID	Event Cat. Name
002	Deviation

Area

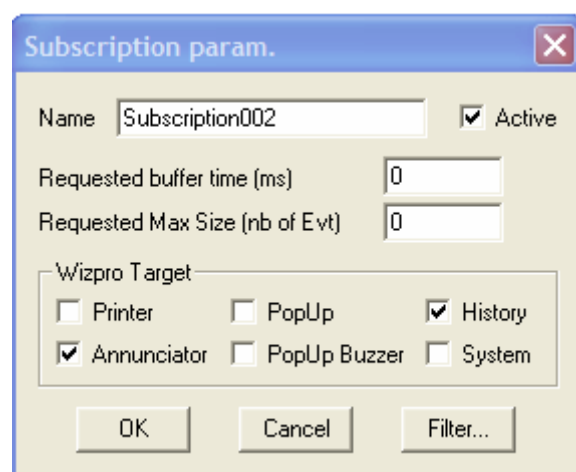
boiler2\makeup  
water1\boiler1

Source

FIC1002

## Modifying a subscription

To modify a subscription, put your pointer on the subscription you want to change and select « Subscription Param » menu. The dialog box will display all the parameters previously defined by yourself and you will be able to change them.



**Subscription param.**

Name  ☒ Active

Requested buffer time (ms)

Requested Max Size (nb of Evt)

Wizpro Target

☐ Printer ☐ PopUp ☒ History

☒ Annunciator ☐ PopUp Buzzer ☐ System

OK

Cancel

Filter...



## ***Saving the configuration***

---

Each OPC A&E configuration for Wizcon must be saved in a file (\*.wae). These files can be used when restarting the WIZAE\_Client.

*To save a configuration, go to the file menu and choose Save or SaveAs. When you save a new configuration or when you select SaveAs, the dialog box will appear and will enable you to choose the name for your save. Type the name in the « File name » field and click on the Save button.*

## ***Updating a subscription (Refresh)***

---

The « Refresh » popup menu can be displayed from the level « Subscription » on WizAEClient. This menu enables you to ask the associated server to send all the active alarms and events on the server. Once this function has been used, a notification will follow and the OPC A&E client will inform Wizcon according to the subscription parameters. You must be careful when using this function since it can create double entries in Wizcon alarm register.

## ***Correcting errors on the server***

---

The OPC AE client for Wizcon regularly checks the server status. If the server does not respond fast enough, the OPC AE client for Wizcon will disconnect and will try to reconnect every minute. The servers can inform the clients that they have stopped.

## ***Working with a network***

---

The OPC DA client can connect to any OPC server, on the local machine or across a network. If you want to use a server on a different machine you must check the following points:

- That you have installed the OPC Core components on the network machine
- You have the correct access rights on this machine

During the connection to the OPC server, VPWNOPC uses the OPCEnum.exe component. You must check that it is correctly installed. Once this is done, you must check that you have the correct authorization and launch rights on the server machine. Use DCOMCNFG.exe for this. Refer to the Appendix for details of how to do this.

## ***Using Master/Backup mode from Wizcon***

---

On a regular basis, the AE client from Wizcon checks the Master/Backup mode of the local station. The subscription behaves as follows:

*If the local station is in « Backup » mode, WizAE\_Client deactivates the subscriptions. During this time, the subscription is idle; the client should no longer receive status change from the server.*

## WIZTUNE.DAT file

### OPCAE\_HMICLI\_VISIBLE

#### Description

This will indicate if the user interface from the OPC AE Client for Wizcon will be visible during use. In the case where the user interface is invisible, it will be impossible to have access to the Show/Hide and Exit menus.

Parameter	Description	Value
OPCAE_HMICLI_VISIBLE	The HMI will be visible and the Show/Hide menus can be used	TRUE
OPCAE_HMICLI_VISIBLE	The HMI will be invisible and the SysTray menus will be shaded-out <b>(default value)</b>	FALSE

#### Example

OPCAE\_HMICLI\_VISIBLE = TRUE

### Compatibility

The OPC A&E client for Wizcon is compatible with Wizcon 8.2 and above.

### Tricks

- To start the application you can double click in a \*.wae file in Windows Explorer.
- WIZAE\_Client <\path\filename.wae> will launch the client with the stored configuration.
- WizAE\_Client can be started before Wizcon.
- If you launch the WIZAE\_Client before Wizcon, you must refresh after starting Wizcon.

### Known Bugs and characteristics

- Print preview and print lead to an blank page

## OPC HDA Server (WizOPCHDA)

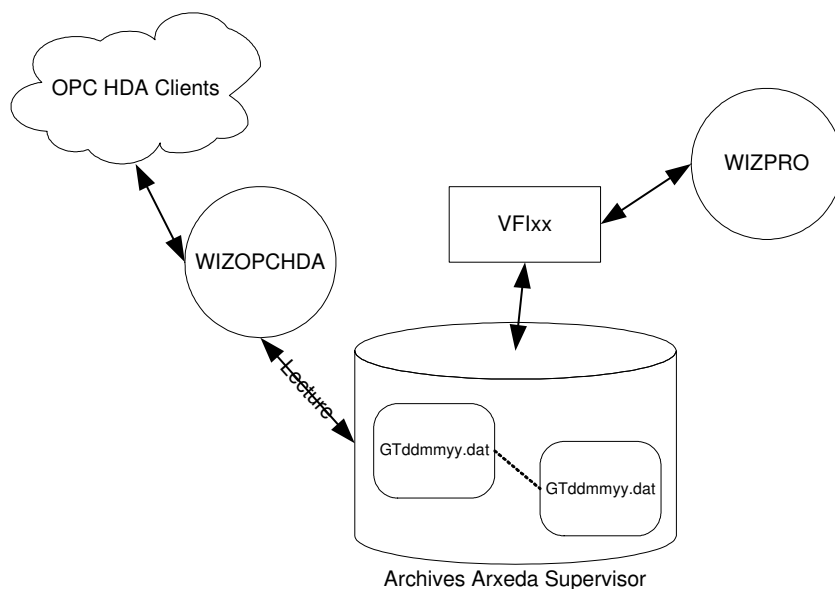
WizOPCHDA is an OPC server conforming to the OPC Historical Data Access (HDA) specification version 1.2. It enables to show OPC HDA clients all the archives managed by an Axeda Supervisor™ application. This server will only show archived items. However, it will not show the alarm archives.

The HDA server is a HDA “wrapper” for the historical data from Axeda Supervisor™. It manages archives using VFIST<sup>1</sup> as well as VFICB.

The HDA server manages all the compulsory interfaces from the OPC HDA 1.0, 1.1 and 1.2 specifications, and also some of the optional interfaces. A compatibility test has been carried out to guarantee the compatibility of WizOPCHDA with the OPC HDA standards.

### Control Flow

The OPC HDA server in the figure below is entirely independent from VFI standards. It uses data archived by the VFI but it will not replace the traditional VFI architecture. OPC HDA clients can add data to the Wizcon archives, but they cannot remove nor replace any. This drawing shows the functional architecture for the HDA server for Wizcon

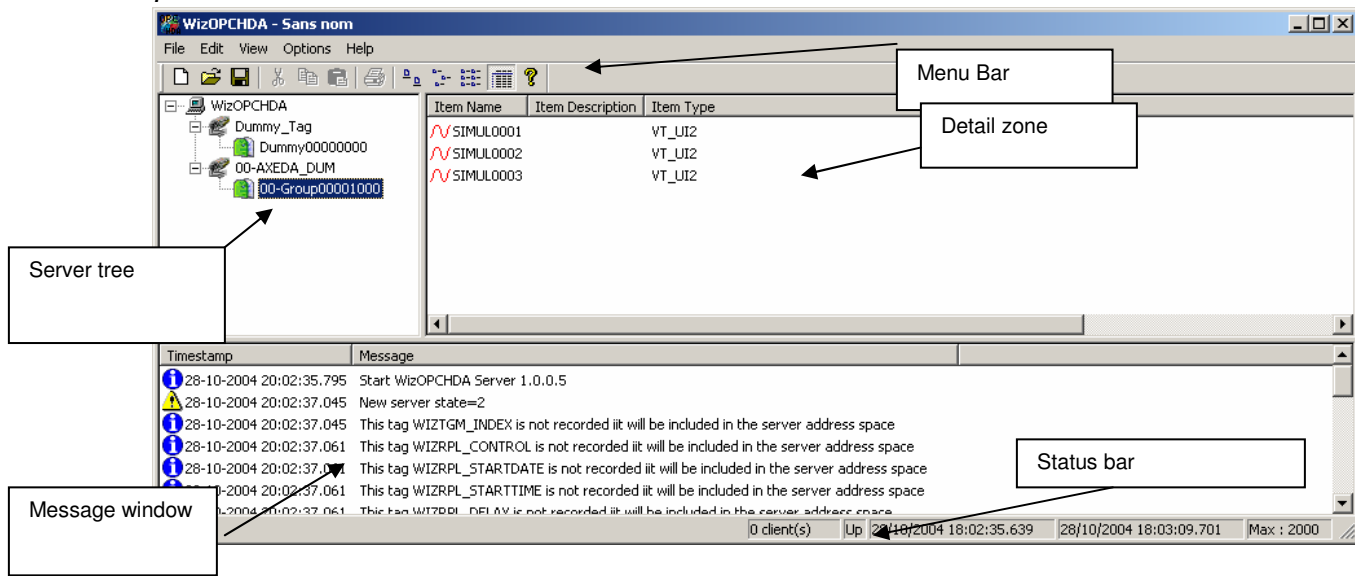


<sup>1</sup> VFI is the format used by Axeda Supervisor™ to manage historical data.

## User Interface

The OPC HDA server for Wizcon is a 32-bit application similar in appearance to Microsoft Windows explorer. It will automatically show all the tags associated with the running Wizcon application

The OPC HDA server for Wizcon user interface consists of 5 sections as shown below



## Menu Bar

### File Menu

The OPC HDA server for Wizcon uses the **\*.sha file** extension.

#### Save

Will enable to save the current configuration in a \*.sha file. If none of the configuration files is associated with the running application, the following dialog box will appear and will enable you to choose the configuration file name:

#### Open

Will enable you to change a previously saved configuration. If a configuration is already loaded, the usual options are modified and a shutdown message is sent to all the connected clients and the new configuration is loaded instead.

#### Last file

The last four configuration files are shown in this list.

## Exit

Will send a Shutdown message to all the connected clients and will shut the application down.

## Edit menu

These options are not implemented in this version.

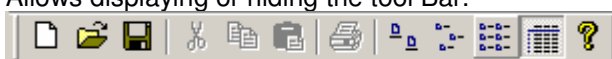
## View menu

### Status bar

Allows displaying or hiding the Status Bar.

### Toolbar

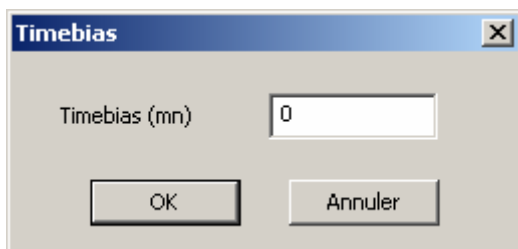
Allows displaying or hiding the tool Bar.



## Option menu

### Time-bias

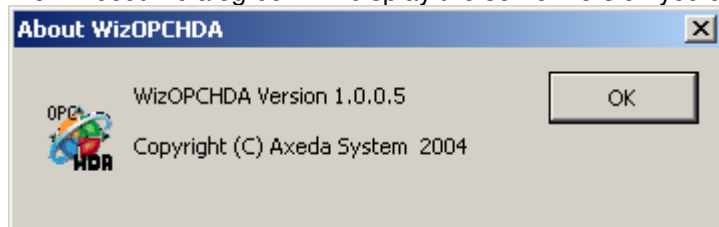
This menu allows you to load the dialog box enabling the time-bias parameters to be set. The time-bias is a parameter (in minutes) which allows you to adjust the date and time for the data swapped between the client and the OPC server. The dialog box looks as follows:



## Help menu

### About

The « About » dialog box will display the server version you are currently using.



## Status Bar

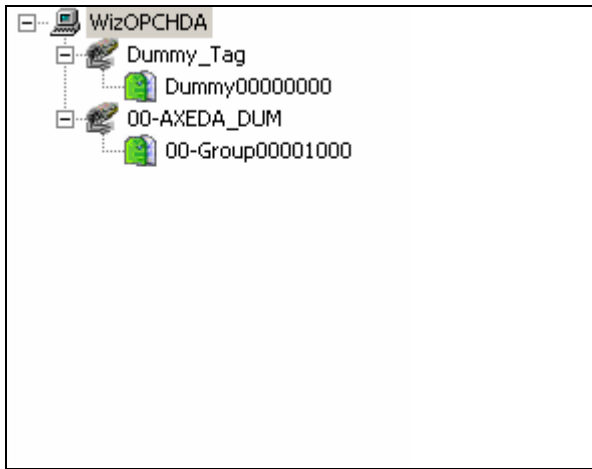
---

The status bar contains information regarding the OPC DA server for Wizcon and also some information regarding the status of your system buttons (CAPLOCK, NUMLOCK, etc.).

Ready 0 client(s) Up 28/10/2004 18:21:51.217 28/10/2004 18:34:18.655 Max : 2000	
Title	Description
Status	
X client(s)	Number of OPC clients currently connected to the server.
status	Shows the internal server status: UP, DOWN...
Start up time	When the HDA server was started.
Current time	When the last information transmission to connected clients was made
Max :xxx	Maximum number of variables swapped in an OPC HDA request

## Server tree

The OPC server for Wizcon will automatically build its address space. The address space is displayed on the left side of the user interface.



The tree splits the tags depending on their group and type

- Dummy
- Compound
- PLC

Please refer to the server address space for more information

Warning: this tree is only made with the tags archived by Wizcon.

## Detail zone

The detail view can show three different contents depending on the tree level chosen in the server tree.

## Root level

Vpi Num	Vpi Name	Vpi Description
0	Dummy_Tag	Dummies tags in the current Wizcon application
1	00-AXEDA_DUM	VPI tags in the current Wizcon application

## Branch level

Group Num	Group Name	Group Description	Items
0	00-Group00001000	WizOPCDA sampling group	3

## Tags/items level

Item Name	Item Description	Item Type
WIZHDA_ANNOTATIONS	WizOPCHDA ...	VT_BSTR
ANA01	Tag fictif ANA01	VT_R4
ANA02	Tag fictif ANA01	VT_UI2
ANA03	Tag fictif ANA01	VT_UI2
ANA04	Tag fictif ANA01	VT_UI2
ANA05	Tag fictif ANA01	VT_UI2
ANA06	Tag fictif ANA01	VT_UI2
SIMUL_SEC	Simulation de...	VT_UI2
INTERPOLATION	Tag pour le c...	VT_UI2

## Systray

Systray is the icon representing a program on the task bar in the bottom right corner of your screen. The picture below shows the Systray. On this picture the systray from the OPC HDA server for Wizcon is the furthest on the left. When you put your pointer on it the following message will:

« Axeda Wizcon OPCHDA Server »

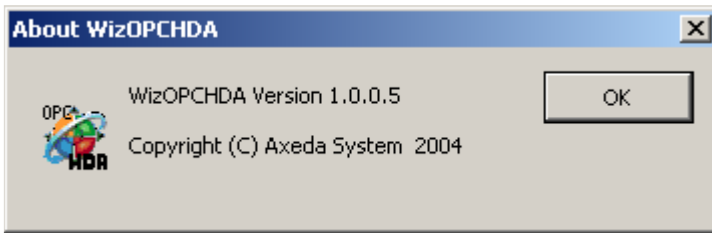


If you click on the mouse right button, the following menu appears, with three choices: About, Show/Hide and Exit.



## About

Displays the « About » dialog box concerning the OPC HDA server for Wizcon.



## Show/Hide

Displays user interface for the OPC HDA server. Your access to this menu will depend on the parameter « OPCDA\_HMISVR\_VISIBLE » set up in the Wiztune.dat file.

## Exit

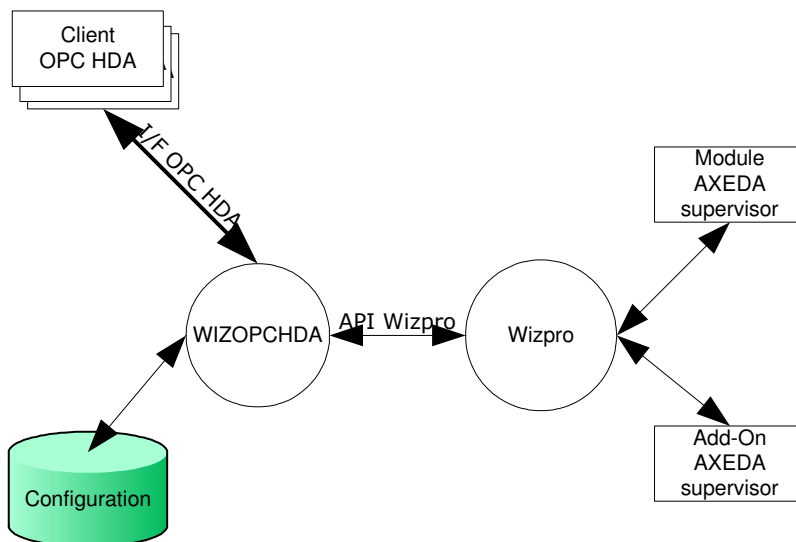
Stops the OPC server. It will display a SHUTDOWN message to all the OPC clients. Access to this menu will depend on the parameter « OPCDA\_HMISVR\_VISIBLE » set up in the Wiztune.dat file.

## Server address space

### Overview

The OPC Historical Data Access server for Wizcon, WizOPCHDA, follows the OPC HDA 1.0 to OPC HDA 1.2 specifications. It shows all the Wizcon tags to OPC clients using the OPC interfaces

### Flow chart





WizOPCHDA can be started before Wizcon. It will automatically configure its address space from the running database in the Wizcon application.

## OPC Item Names

The item names shown by the server are built according to a schema built with the following elements.

Variable type:

- Dummy
- Compound
- PLC
- Sampling frequency
- Wizcon tag name

So the format for the items names is as follows:

VV-DDDDDDDDDD.NN-Groupxxxxxxx.TAGNAME with:

VV-DDDDDDDDDD.NN-Groupxxxxxxx.TAGNAME with:

VV	= = VPI Number (not in for dummy and compound tags)
DDDDDDDDDD	VPI Name <i>Dummy Tag</i> for dummy and <i>Compound Tag</i> for others
NN	System Tag for internal tags
xxxxxxx	Branch number (internally generated )
TAGNAME	Sampling frequency associated with this tag in Wizcon.
	Tag name Wizcon

Examples:

Description in Wizcon	OPC Item Name
ANA01, Fictif	Dummy_Tag.Dummy00000000.ANA01
TAG SIMUL00001 in the <b>DUMMY Driver</b> from Wizcon reading speed 1000ms	00-AXEDA_DUM.00-Group00001000.SIMUL00001
Tag Compound001	Compound_Tag.Compound00000000.COMPOUND001

## Item quality

Wizcon does not take into account the item quality as defined in the OPC HDA specification. The server will have to change the quality from the available status in Wizcon archives. Please refer to the OPC HDA specification to get further information on HDA quality.

## Time Format

The WizOPCHDA server handles GMT time format. It can also handle requests with absolute or relative dates. Times specified with « relative » options conform to the OPCHDA 1.2.specification. The parameter time-bias can be used to adjust exchanges with OPC HDA clients.

## Data access

### Implemented functionality

---

The OPC HDA server for Wizcon has the following interfaces:

#### Mandatory interfaces

- IOPCCommon
- IOPCHDA\_Server
- IOPCHDA\_Browser
- IOPCHDA\_SyncRead

#### Optional interfaces

- IOPCHDA\_SyncUpdate
- IOPCHDA\_SyncAnnotations
- IOPCHDA\_AsyncRead
- IOPCHDA\_AsyncUpdate
- IOPCHDA\_AsyncAnnotations

#### “out” interfaces

- IOPCHDA\_DataCallback.
- IOPCShutdown

For further information about these interfaces and associated methods, please refer to OPC HDA 1.x. specification.

## Aggregate Support

Name	Calculation Details
OPCHDA_INTERPOLATIVE	To calculate linear interpolation or extrapolation for the values on a linear sampling interval.
OPCHDA_TOTAL	Total = time_weighted_avg * interval_length (sec)  with:  time_weighted_avg = result of the aggregate TIMEAVERAGE using the sampling frequency provided by the "total" aggregate.
OPCHDA_AVERAGE	For a given time interval, get the sum of all good raw values and divide them by the number of values. If no value is available during the specified sampling range, this will return the value OPCHDA_NODATA.
OPCHDA_TIMEAVERAGE	Uses the values calculated by the OPCHDA_INTERPOLATIVE aggregate function to find the values at the start and end of the given time period. A straight line is drawn between all values between this range and the average is calculated by dividing the sum of these values by the time interval.
OPCHDA_COUNT	Returns the number of raw values collected during the sampling period.
OPCHDA_MINIMUMACTUALTIME	Finds the minimum value calculated between the given time interval. The time stamp of this value is also returned.
OPCHDA_MINIMUM	Finds the minimum value calculated between the given time interval. The time range is also returned.
OPCHDA_MAXIMUMACTUALTIME	Finds the maximum value calculated between the given time interval. The time stamp of this value is also returned.
OPCHDA_MAXIMUM	Finds the maximum value calculated between the given time interval. The time range is also returned.
OPCHDA_START	Looks for the first value during the sampling range
OPCHDA_END	Looks for the last value during the sampling range
OPCHDA_STDEV	Finds the standard deviation of the data in the given sampling period.

## Handling annotations

### Interfaces

I/F	Methods
IOPCHDA_SyncAnnotations	QueryCapabilities
	Read
	Insert
IOPCHDA_ASyncAnnotations.	QueryCapabilities
	Read
	Insert
	Cancel

### Operating method

The OPC HDA server from Wizcon handles annotations OPC HDA. In order to handle these annotations, the server will automatically create a tag in your Wizcon application; this tag will be called WIZHDA\_ANNOTATIONS. So for OPC HDA clients, this tag will carry the following OPC HDA itemID: **Dummy\_Tag.Dummy00000000.WIZHDA\_ANNOTATIONS**.

This tag will be a string of characters. All the annotations will be stored in Wizcon archives through this tag. Each tag associated to an annotation will be stored as follows:

[xxxxx] annotation title, with xxxxx = Wizcon GateID

Example:

[00056] change of general power.

**Beware: you must not manually write this tag otherwise you will corrupt your archives**

## Handling attributes

Attributes are read using the synchronous and asynchronous methods through the IOPCHDA\_SyncRead and IOPCHDA\_ASyncRead interfaces. The reading method used by the OPC HDA client is always ReadAttribute. Since Wizcon does not archive attributes it will always be impossible to transmit to OPC HDA clients anything else than the current attribute values.

### List of handled attributes

Index	ID	Name	Type	Description
1	1	Data Type	VT_I2	Data type m_usFormatType (translated to en VARTYPE)
2	2	Description	VT_BSTR	Item Description m_szTagDesc
3	5	Archiving	VT_BOOL	Indicates whether historian is recording data for this item
4	7	Node Name	VT_BSTR	Your PC name
5	9	Source Name	VT_BSTR	Item tag source :  For PLC tag = m_szTagAddress

6	10	Source Type	VT_BSTR	For COMPOUND : m_Const1 m_TagName1 m_Const2 m_TagName2
7	11	Normal maximum	VT_R8	Data source type m_ucSourceType
8	12	Normal Minimum	VT_R8	Maximum normal value for an item. m_dHihi
9	13	ItemID	VT_BSTR	Minimum normal value for an item. m_dLolo
				Wizcon item name. m_szTagName

## Server operating modes

The WizOPCHDA server can operate following two modes:

- As an stand-alone application
- As a PLC application

You do not have to manually start the server; you can let the OPC Historical Data Access clients start the server. This server can operate locally or through the network. It is COM/DCOM server.

## Using Master/Backup mode from Wizcon

No particular treatment is made. The server continually displays the data available in Wizpro.

## WIZTUNE.DAT file

### OPCHDA\_HMISVR\_VISIBLE

#### Description

Indicates that the user interface for the OPC HDA server for Wizcon will be visible or invisible during use. In the case where the user interface is invisible, it will be impossible to have access to Show/Hide and Exit menus.

Parameter	Description	Value
OPCHDA_HMISVR_VISIBLE	The server's user interface will be visible and the Show/Hide menu can be used.	TRUE
OPCHDA_HMISVR_VISIBLE	User interface will be invisible and the SysTray menus will be blocked <b>(default value)</b>	FALSE

#### Example

OPCHDA\_HMISVR\_VISIBLE = TRUE

## Compatibility

---

The OPC HDA server for Wizcon is compatible with Wizcon 8.2 and above. The OPC HDA server for Wizcon is compatible with the Compliance Test Tool (CTT), published by the OPC foundation, under normal testing conditions.

## Server ProgID

---

The server ProgID is: WizOPCHDA.Axeda.1

## Description

---

The description string is « Vendor Info » OPC. It is: **Axeda**

## Tricks and fixes

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Before making your connection, check that your server works properly, using a client test.

## Appendix: Configuring DCOM for OPC

Before using DCOM, you need to install a Windows network client on the client station. To check whether a client is installed, open the “Local Network Connection Properties” dialog box.

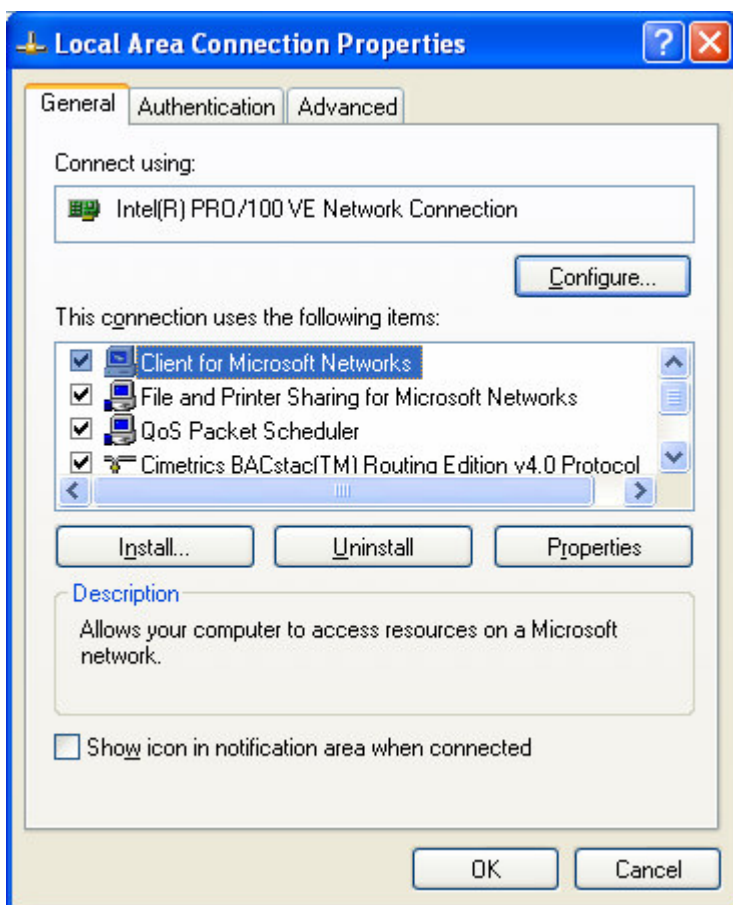


Figure 1: Local Area Network Connection Properties

Access to DCOM servers is managed by Windows Security. You therefore need to have some knowledge of Windows network security before using DCOM. You should know how to give access permissions so that a DCOM “server” can be accessed by client applications.

The fundamental question to which you need to be able to answer is “Who manages security for my network?” If you cannot reply to this question, stop for a moment and find out the answer!

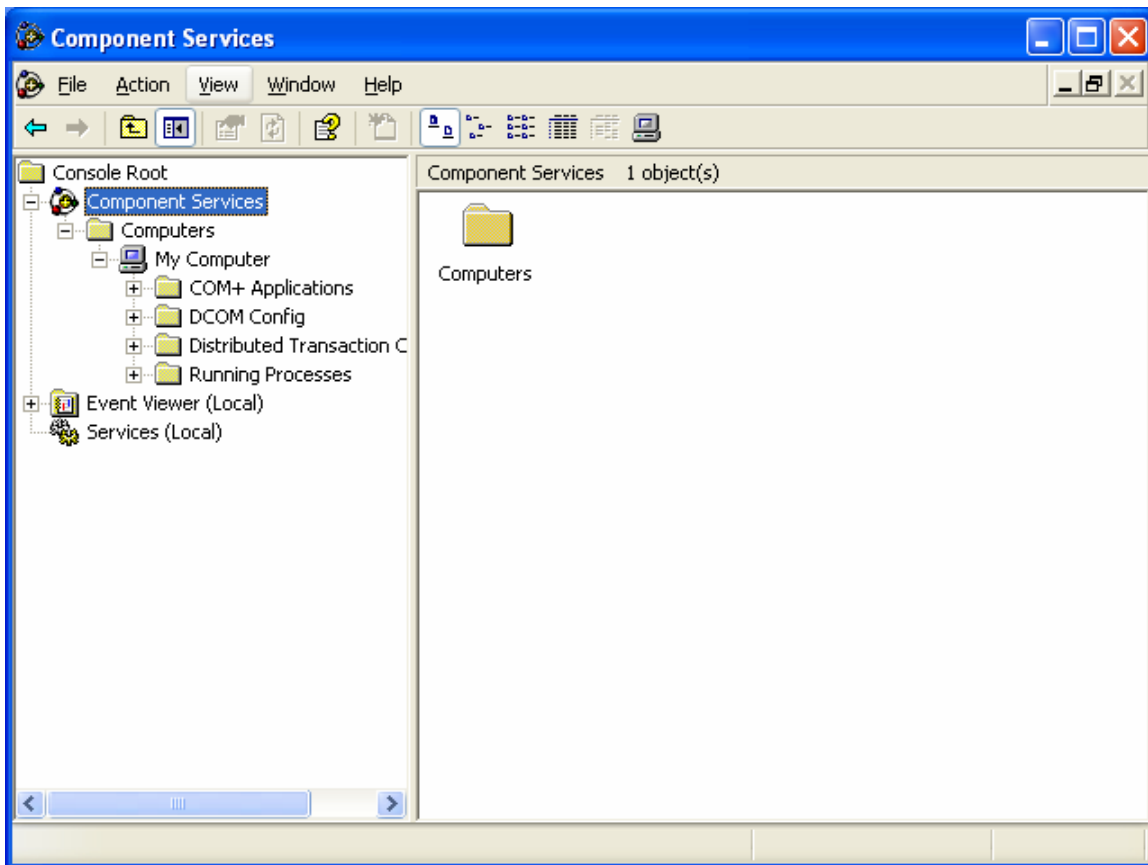
Windows includes a tool to help you to configure DCOM, DCOMCNFG.exe.

## DCOMCNFG

Like many other Windows utilities, DCOM configuration information is stored in the registry. Launching DCOMCNFG depends on the operating system that you use.

### Launching DCOMCNFG on Windows XP

On Windows XP, the configuration process is slightly different. As above, use the start menu to launch dcomcnfg. Now, the component services dialog box appears.



**Figure 2: Component Services Configuration Window**

In the tree view on the left-hand-side, select “Component Services” then “Computers”, expand the list and select “My Computer”. A right-click will show a popup menu; choose “Properties”.



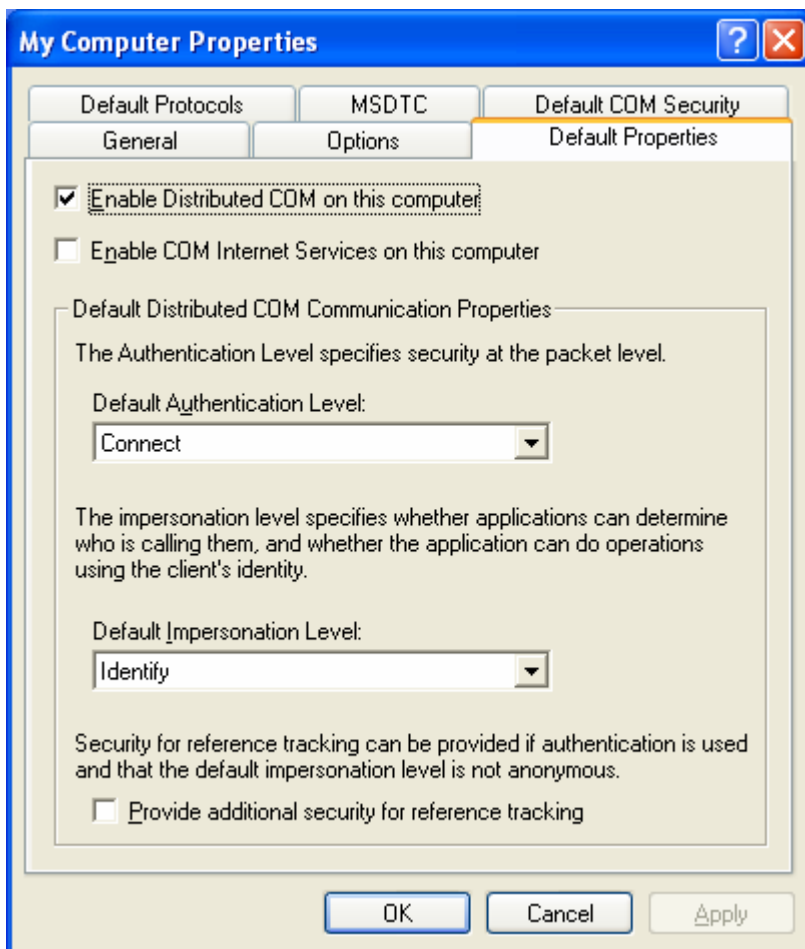


Figure 3: DCOMCNFG on Windows XP

This will launch DCOMCNFG. You will see above that there are six tabs on this dialog box.

## Launching DCOMCNFG on Windows 2000/NT

Start DCOMCNFG as shown in the figures below.

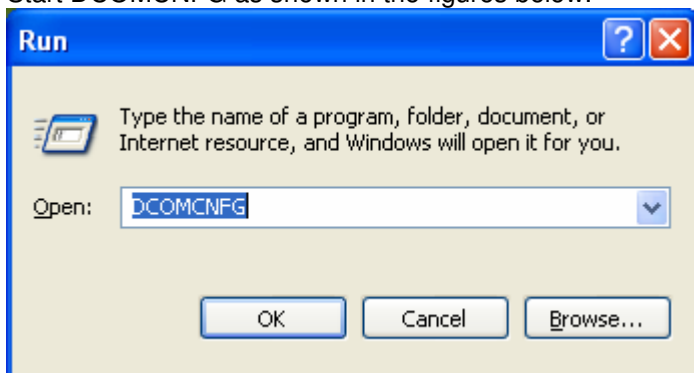


Figure 4: Launching DCOMCNFG from the Start menu

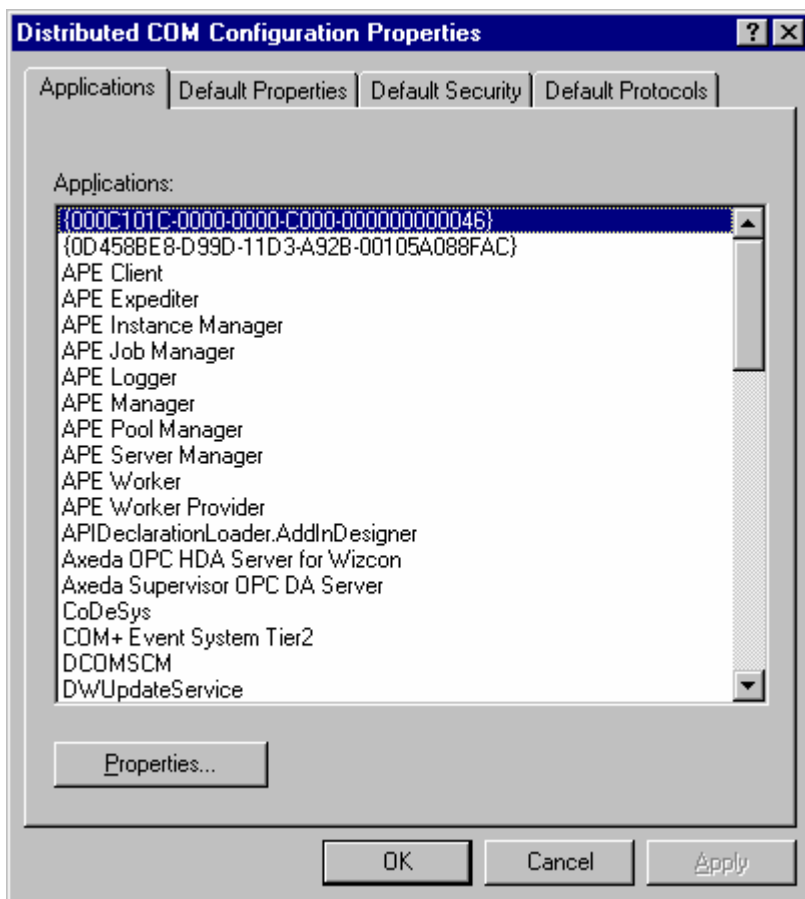


Figure 5: DCOMCNFG in Windows 2000/NT

Note that in this case, there are only four tabs on the dialog box. Tabs that are common to all Windows operating systems will be discussed in this appendix:

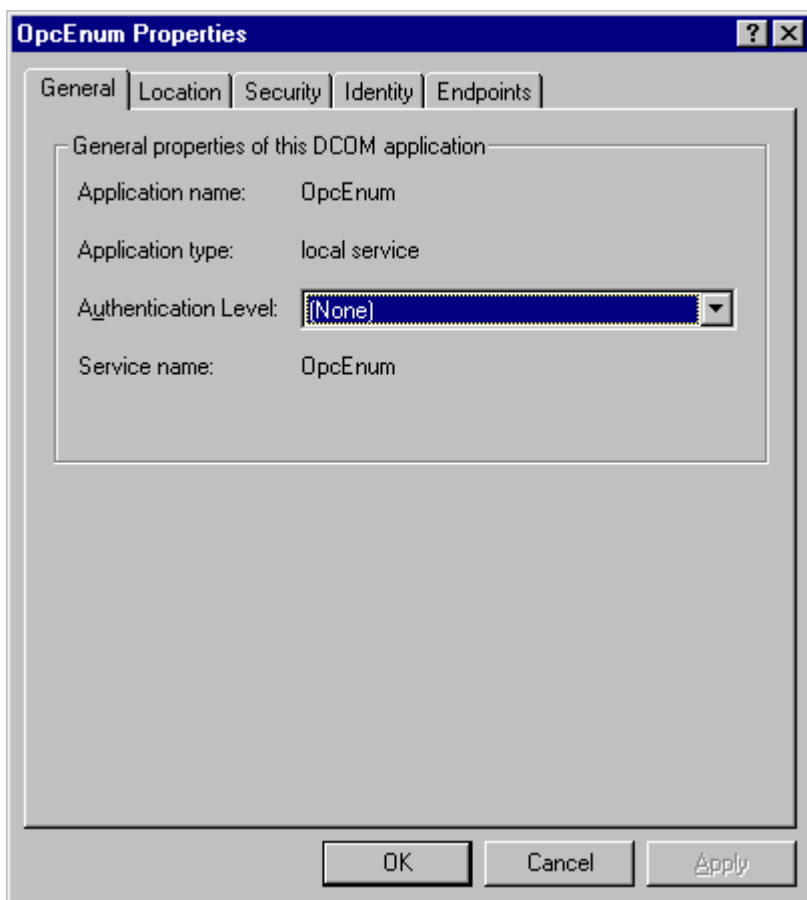
- Applications
- Default Properties
- Default Security
- Default Protocol

In order to set the security properties you must have administrator rights. Remember that you will be configuring DCOM for all processes and not individual objects or methods. If you need a finer grained security level, please refer to the OPC Security Specification.

DCOMCNFG allows two different kinds of configuration; « default » or « personalized » for each DCOM component. You should therefore define the default configuration and the configuration for all of the components that you will use.

## Application Tab

This tab shows you the list of DCOM servers and components installed on your machine. Select the component of interest and press the « Properties » button. The resulting dialog box will allow you to modify all of the properties for the selected OPC/COM/DCOM component or server.



**Figure 6: Property dialog box for a DCOM component**

Remember that when a server receives a restart command from a client, the Service Control Manager (SCM) verifies that the client is authorized to restart the server.

NB: Windows XP now presents the above dialog box in the form of a tree, but the principles remain the same.

We will now look at each of the five tabs on the dialog box shown in Figure 6.

## General

### Authentication Level

- **None:** No security control is imposed for communication between applications
- **Default:** The default authentication is applied
- **Call:** Security control is applied for each call for the duration of the connection
- **Packet:** The identity of the sender is encrypted to ensure the authenticity of the sender
- **Packet Integrity:** The identity and signature of the sender are encrypted to guarantee the authenticity of the sender and to ensure that the packets have not been modified during transfer.
- **Packet Privacy:** Imposes maximum security: the data, the identity and the signature of the sender are encrypted.

## Location

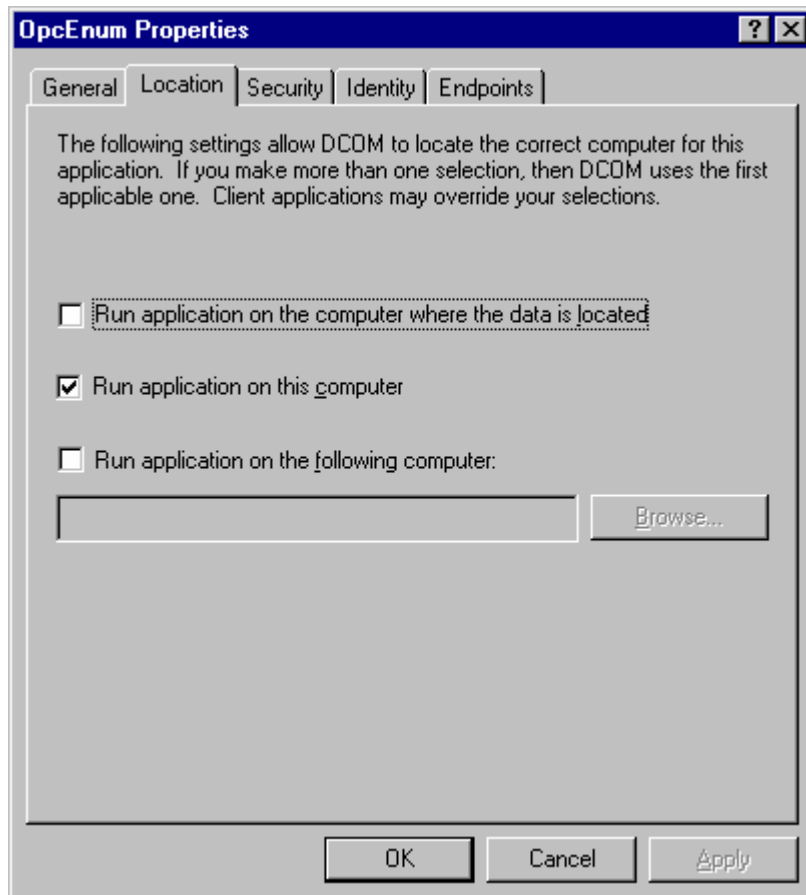


Figure 7: Define the location from which the application will run

This tab lets you choose on which computer you want the COM component to run. If you are setting up a COM server, you should choose the option “Run application on this computer”.

## Security

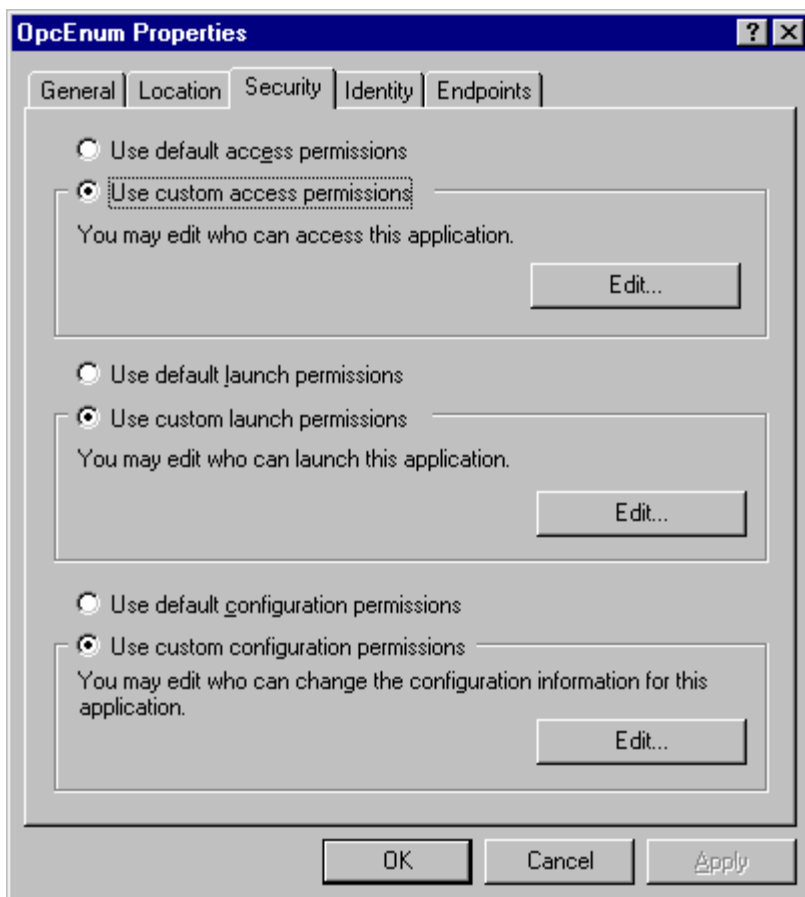
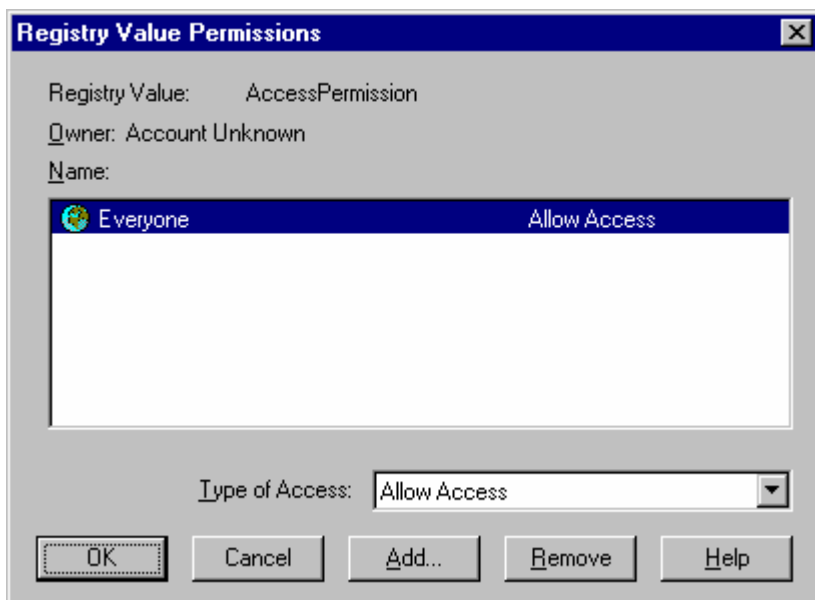


Figure 8: Defining the level of security

- **Access Authorization:** Controls access of a client to a server that is already running.
- **Launch permissions:** A DCOM server doesn't necessarily need to be running in order to execute client requests. As long as the server's GUID exists in the registry, it can be launched following a connection request. The client must be in the list of users with execution rights for the server.
- **Configuration Permissions:** Gives the server the right to modify the registry. This is because the servers need to write into the registry in order to identify themselves. In general, this happens when the server starts to run.



**Figure 9:** The list of users who have access to the server. A client who wants to access the server must be in this registry.

## Identity

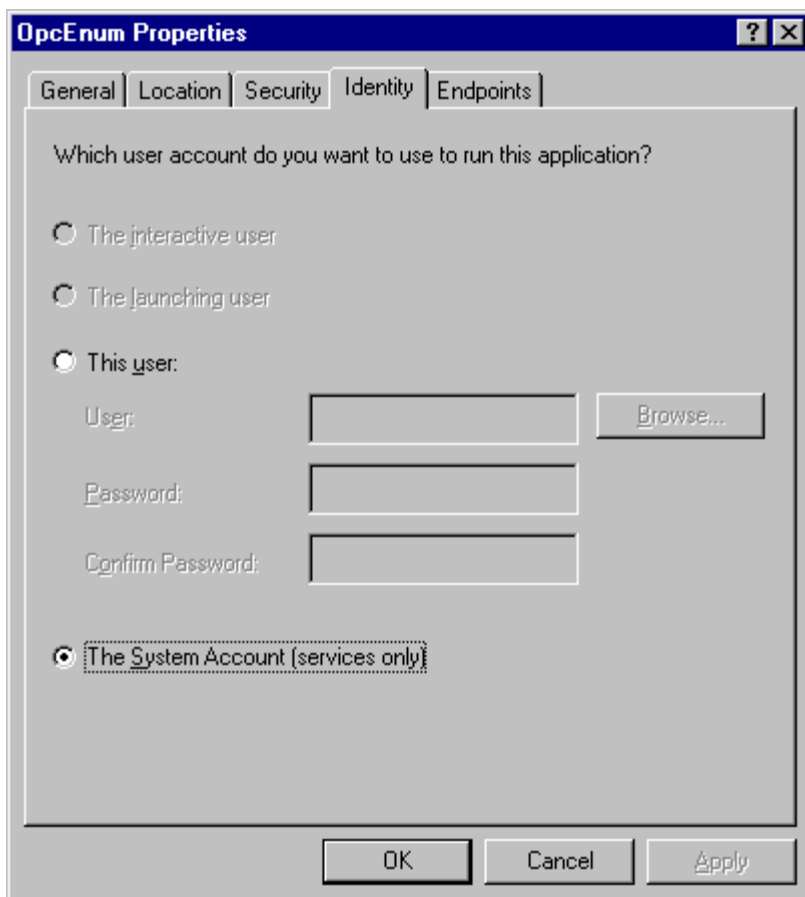


Figure 10: Specifying the identity of the user who will use the server

- **Interactive User:** Specifies that the application will run using the security context of the currently connected user ("the interactive user"). The interactive user may be the same as the launching user.
- **Launching user:** Specifies that the application will run using the security context of the user who started the application in order to be authorized in the domain.
- **This user:** Specifies that the application will run using the security context of the specified user.

If the server has been installed as a Windows service, the last option, « The System Account » will be activated. Often, installing a DCOM component as a service is the simplest way to configure it.

## Endpoint

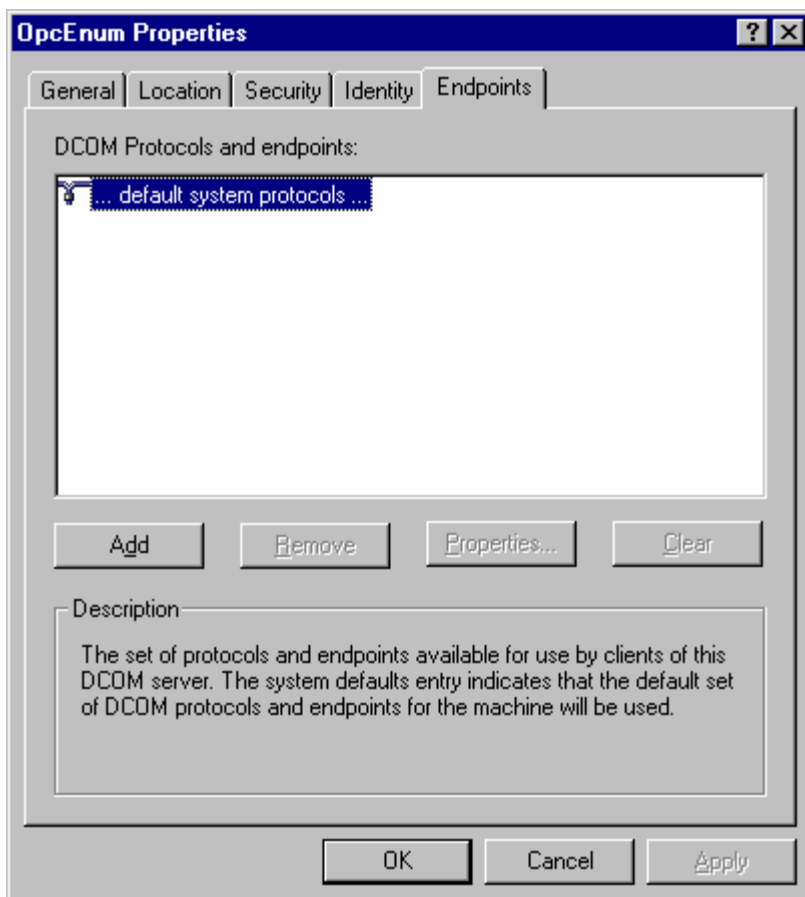


Figure 11: Defining the endpoints available for a user of the server

This shows the list of available protocols and endpoints available for use by clients wanting to use the DCOM component on this computer. The first protocol in the list will be chosen as a priority.



## Default Properties

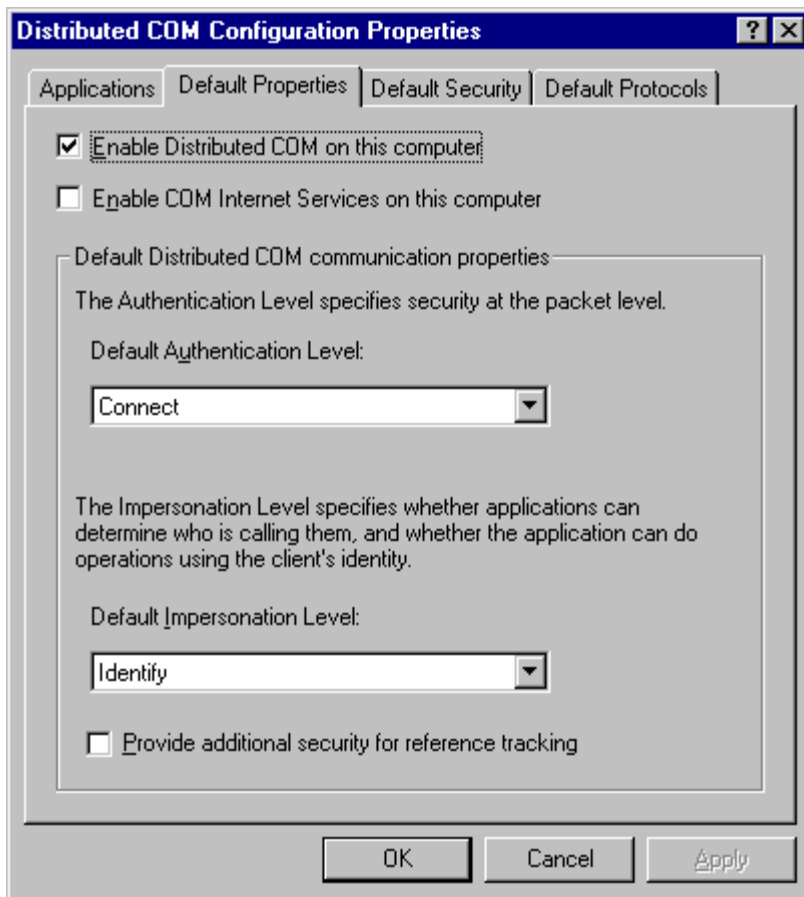


Figure 12: Specifying the default properties of the DCOM server

This tab allows you to do the following:

- **Enable DCOM on this computer**
- **Enable COM Internet Services on this computer:** When Microsoft IIS runs on this computer, use this option to allow applications running on this computer to receive COM requests using COM Internet Services protocols. By default, this option is turned off.
- **Authentication Level:** Defines the security level for packets of data sent between applications. The default value applies to all applications installed on the computer. Windows identifies connected users using the parameters chosen in Authentication Level. The same authentication level should be chosen for both the client and the server. The server specifies the minimum authentication level required for clients who want to connect. All requests for connection with an authentication level lower than the minimum will be blocked. The following values are available for defining the authentication level:
  - **None:** No security control is imposed for communication between applications
  - **Default:** The default authentication is applied
  - **Call:** Security control is applied for each call for the duration of the connection
  - **Packet:** The identity of the sender is encrypted to ensure the authenticity of the sender

- **Packet Integrity:** The identity and signature of the sender are encrypted to guarantee the authenticity of the sender and to ensure that the packets have not been modified during transfer.
- **Packet Privacy:** Imposes maximum security: the data, the identity and the signature of the sender are encrypted.
- **Impersonation Level:** This value defines the authorization level that a client application “lends” to a server application so that it can perform actions on its behalf. The default value applies to all applications installed on the PC. You should only change it if it hasn’t been set on the client application. This parameter controls how OPC data will be passed to APIs in the OPC client that need to return data to the caller. The available security levels are the following:
  - **Anonymous:** The server performs its work without knowing the identity of the client application.
  - **Identify:** The server application can ask for the identity of the client application.
  - **Impersonate:** The server application can “borrow” the identity of the client application be performing tasks for the client on behalf of the client. The server can only do this on the computer upon which the server is running.
  - **Delegate:** The server can perform actions on behalf of the client on *another* PC. In essence, the server plays the role of the client on other computers.

**NB:** The authentication level parameter is unused in Windows 2000.

### Extra security for reference tracking

The following parameters define how closely the server will track connected client applications. This will use more memory on the computer. However, it will ensure that a client application cannot interrupt the server calculations by inadvertently setting the COM objects reference counter to zero.

## Default Security



Figure 13: Defining default security levels

- **Access Authorization:** Controls access of a client to a server that is already running.
- **Launch permissions:** A DCOM server doesn't necessarily need to be running in order to execute client requests. As long as the server's GUID exists in the registry, it can be launched following a connection request. The client must be in the list of users with execution rights for the server.
- **Configuration Permissions:** Gives the server the right to modify the registry. This is because the servers need to write into the registry in order to identify themselves. In general, this happens when the server starts to run.

## Default Protocols

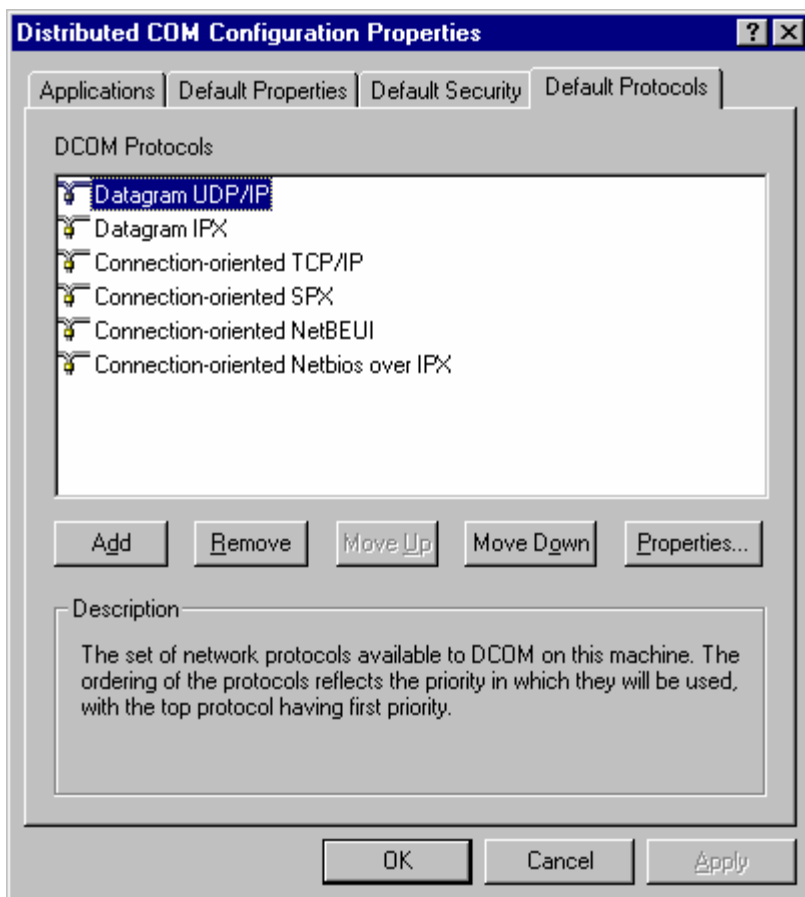


Figure 14: Defining the default protocols

This section allows you to define the protocol used by DCOM as well as the order in which they are used. For certain protocols e.g. TCP/IP, you can change their properties, such as which ports to use. This option allows DCOM components to be use when firewalls are installed.

## ***Dangerous: How to run DCOM with no security***

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You should only use the following instructions only when running on a test platform. Basically they will show you how to disable DCOM security. Just follow these actions:

1. **On the client machine:**
  - a. Set the authentication level to “None”
  - b. Set the impersonation level to “Anonymous”
2. **On the server machine:**
  - a. Set the authentication level to “None”
  - b. Set the impersonation level to “Anonymous”
3. Add “Everybody” and “System” to the access and execution rights on the “Default Security” tab.

Be warned that these settings may cause the Windows installer to stop working.